UNIVERSITI PUTRA MALAYSIA

NEUROPROTECTIVE ANTIOXIDANT-BASED THERAPEUTIC PROPERTIES OF MALAYSIAN MEDICINAL PLANTS IN JAVANESE MEDAKA (Oryzias javanicus BLEEKER, 1854)

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By

HASSAN MAINA IBRAHIM

Thesis Submitted to the School of Graduate Studies, Universiti Putra Malaysia, in Fulfillments of the Requirement for the Degree of Doctor of Philosophy

January 2017

DEDICATION

This work is dedicated to Almighty ALLAH, my family and all those who stand for truth and justice.

Abstract of thesis presented to the Senate of Universiti Putra Malaysia in fulfilment of the requirement for the Degree of Doctor of Philosophy

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Chairman : Syahida Ahmad, PhD
Faculty : Biotechnology and Biomolecular Sciences

Accumulation of heavy metals such as arsenic has been identified as an endogenous neurotoxin that caused stroke, Alzheimer's disease (AD) and Parkinson disease (PD). Current treatments for those neurodegenerative diseases are not effective and caused many side effects. Thus, the search for alternative medicines is in high demand. Therefore, the aim of this study is to evaluate the antioxidant and neuroprotective properties of Malaysian medicinal plants using *in vitro* and *in vivo* models. Initially, 10 plant extracts, which were *Melastoma malabathricum* (leaf and stem), *Polygonum minus* (leaf and stem), *Ficus deltoidea* (leaf), *Phaleria macrocarpa* (leaf), *Clinacanthus nutans* (leaf), *Murraya koenigii* (leaf), *Curcuma longa* (leaf), *Paederia foetida* (leaf) including the reference plants extracts which were *Curcuma longa* (rhizome) and *Ginkgo biloba* (seed) were extracted using 80% methanol and screened for antioxidant activities using DPPH and FRAP assays as well as *in vitro* and *in vivo* toxicity effects on human neuroblastoma cells line (SH-SY5Y) and zebrafish (*Danio rerio*) embryos, respectively. Screening results showed that *Melastoma malabathricum* (leaf and stem), *Murraya koenigii* (leaf), *Curcuma longa* (leaf and rhizome), *Ficus deltoidea* (leaf), *Phaleria macrocarpa* (leaf) and *Ginkgo biloba* (seed) demonstrated high antioxidant activities with IC_{50} range of 1–100 µg/mL in both DPPH and FRAP assays. Among the active plants, *Curcuma longa* (leaf) and *Ginkgo biloba* (seed) showed no toxicity effects with LC_{50} values >1000 µg/mL, while *Melastoma malabathricum* (leaf and stem), *Polygonum minus* (stem) and *Ficus deltoidea* (leaf) showed low toxicity effects on SH-SY5Y cells with 50% lethal concentration (LC_{50}) range 500-1000 µg/mL. On the other hand, *Paederia foetida* (leaf), *Curcuma longa* (leaf) and *Ginkgo biloba* (seed) showed low toxicity effects towards zebrafish embryos with LC_{50} range 500-1000 µg/mL. However, *Polygonum minus* (leaf) and *Curcuma longa* (rhizome) showed high toxicity effects on SH-SY5Y cells with lethal concentration (LC_{50}) range of 199.7±0.46 and 185.7±0.21 µg/mL, repectively. While, *Clinacanthus nutans* (leaf) and *Curcuma longa* (rhizome) showed high toxicity effects towards zebrafish embryo with LC_{50} 80.6±0.64 and 51.4±0.6

µg/mL, respectively. Based on antioxidant and toxicity screening, two plant extracts which were *Ficus deltoidea* (leaf) and *Phaleria macrocarpa* (leaf) were selected for *in vitro* and *in vivo* neuroprotectvie evaluation in SH-SY5Y cells and adult Javanese medaka (*Oryzias javanicus*). Antioxidant using dichlorofuoresence diacetate (DCF-DA) assay on SH-SY5Y cells revealed high activities of *Ficus deltoidea* (leaf) and *Phaleria macrocarpa* (leaf) at IC_{50} of 177.78±0.8 µg/mL and 146.66±0.1 µg/mL, respectively. Subacute and chronic toxicity tests of selected plant extracts at concentration of 0-95 mg/L were conducted on adult Javanese medaka *(Oryzias javanicus)*. Results showed that *Ficus deltoidea* (leaf) and *Phaleria macrocarpa* (leaf) demonstrated no toxicity effect on subacute and chronic toxicity tests in adult Javanese medaka (*Oryzias javanicus*) with LC_{50} >1000 µg/mL. Neuroprotective test using acetyl-cholinesterase, butyryl- cholinesterase and propionyl-cholinesterase assays disclose significant differences at $P<0.05$ between the treated and non treated groups by both selected plants. Phytochemical analyses showed that vitexin, isovitexin, glycine, methylamine and dimethylamine were bioactive compounds in *Ficus deltoidea* (leaf) while mahkoside A (4, 4′ dihydroxy-2-methoxybenzophenone-6-O-β-D-glucopyranoside) *was* bioactive compound in *Phaleria macrocarpa* (leaf), which might contributed to their high antioxidant and neuroprotective effects. This study has revealed the antioxidant and neuroprotective potential of *Ficus deltoidea* (leaf) and *Phaleria macrocarpa* (leaf). Thus, both plants could be developed as new anti-oxidant based neuroprotective supplement/ herbal products to treat neurodegenerative diseases.

Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia sebagai memenuhi keperluan untuk Ijazah Doktor Falsafah

SIFAT TERAPEUTIK TUMBUHAN UBATAN MALAYSIA BERASASKAN NEUROPROTEKTIF ANTIOKSIDAN BAGI JAVANESE MEDAKA (*Oryzias javanicus* BLEEKER, 1854)

Oleh

HASSAN MAINA IBRAHIM

Januari 2017

Pengerusi : Syahida Ahmad, PhD
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Pengumpulan logam berat seperti arsenik telah dikenalpasti sebagai neurotoksin endogenus yang menyebabkan strok, penyakit Alzheimer's dan Parkinson. Rawatan terkini untuk penyakit kemerosotan neuro adalah tidak berkesan dan menyebabkan kesan sampingan. Oleh itu, pencarian terhadap perubatan alternatif telah menjadi permintaan yang tinggi. Sehubungan itu, tujuan kajian ini adalah untuk menilai aktiviti antioksidan dan Perlindungan neuro daripada tumbuhan ubatan Malaysia menggunakan model *in vitro* dan *in vivo*. Pada mulanya, 10 sampel tumbuhan, *Melastoma malabathricum* (daun dan batang), *Polygonum minus* (daun dan batang), *Ficus deltoidea* (daun), *Phaleria macrocarpa* (daun dan batang), *Clinacanthus nutans* (daun), *Murraya koenigii* (daun), *Curcuma longa* (daun), *Paederia foetida* (daun) dan dua tumbuhan rujukan iaitu, *Curcuma longa* (rizom) dan *Ginkgo biloba* (biji) telah diekstrak menggunakan 80% metanol dan disaring untuk aktiviti antioksidan mengunakan asai DPPH dan FRAP dan juga kesan ketoksikan *in vitro* and *in vivo* ke atas titisan sel neuroblastoma manusia (SH-SY5Y) dan embrio zebrafish (*Danio rerio*). Keputusan saringan menunjukkan *Melastoma malabathricum* (daun dan batang), *Murraya koenigii* (daun), *Curcuma longa* (daun dan rizom), *Ficus deltoidea* (daun), *Phaleria macrocarpa* (daun) and *Ginkgo biloba* (biji) menunjukkan aktiviti aktioksidan yang tinggi dengan julat IC_{50} 1–100 µg/mL dalam kedua-dua asai DPPH dan FRAP. Antara tumbuhan yang aktif, *Curcuma longa* (daun) dan *Ginkgo biloba* (biji) tidak menunjukkan kesan ketoksikan dengan LC_{50} >1000 µg/mL, manakala *Melastoma malabathricum* (daun dan batang), *Polygonum minus* (batang) dan *Ficus deltoidea* (daun) menunjukkan kesan ketoksikan yang rendah terhadap sel SH-SY5Y dengan nilai LC_{50} dalam julat 500-1000 µg/mL. Walau bagaimanapun, *Polygonum minus* (daun) dan *Curcuma longa* (rizom) menunjukkan kesan ketoksikan yang tinggi terhadap sel SH-SY5Y dengan nilai LC_{50} 199.7±0.46 and 185.7±0.21 µg/mL. Sementara itu, *Clinacanthus nutans* (daun) dan *Curcuma longa* (rizom) menunjukkan kesan ketoksikan yang tinggi terhadap embrio zebrafish dengan LC_{50} 80.6±0.64 and 51.4±0.6 µg/mL. Berdasarkan saringan antioksidan dan ketoksikan, dua ekstrak

tumbuhan, iaitu *Ficus deltoidea* (daun) dan *Phaleria macrocarpa* (daun) telah dipilih untuk Perlindungan neuro *in vitro* dan *in vivo* dalam sel SH-SY5Y dan Javanese medaka (*Oryzias javanicus*) dewasa. Antioksidan menggunakan asai diklorofluoresin diasetat (DCF-DA) ke atas sel SH-SY5Y mendedahkan aktiviti yang tinggi oleh *Ficus deltoidea* (daun) dan *Phaleria macrocarpa* (daun) pada IC_{50} 177.78±0.8 µg/mL dan 146.66±0.1 µg/mL. Ujian subakut dan ketoksikan kronik bagi ekstrak tumbuhan terpilih pada kepekatan 0-95 mg/L telah dijalankan ke atas Javanese medaka (*Oryzias javanicus*) dewasa. Keputusan menunjukkan *Ficus deltoidea* (daun) dan *Phaleria macrocarpa* (daun) menunjukkan tiada kesan ketoksikan ke atas ujian subakut dan ketoksikan kronik dalam Javanese medaka (*Oryzias javanicus*) dewasa dengan LC_{50} >1000 µg/mL. Ujian Perlindungan neuro mengunakan asai asetil kolinesterase, butiril kolinesterase dan propionil kolinesterase mendedahkan perbezaan yang ketara pada $P<0.05$ antara kumpulan yang terawat dan yang tidak terawat oleh kedua-dua tumbuhan tersebut. Analisis fitokimia menunjukkan viteksin dan isoviteksin adalah sebatian bioaktif dalam *Ficus deltoidea* (daun), manakala mahkosid A (4,4′ dihidroksi-2-metoksibenzofenon-6-O-β-D-glukopiranosid) adalah sebatian bioaktif dalam *Phaleria macrocarpa* (daun), yang mana mungkin menyumbang kepada kesan antioksidan dan Perlindungan neuro yang tinggi. Kajian ini mendedahkan potensi antioksidan dan Perlindungan neuro *Ficus deltoidea* (daun) dan *Phaleria macrocarpa* (daun). Oleh itu, kedua-dua tumbuhan boleh dibangunkan sebagai produk herba/makanan tambahan berasaskan antioksidan yang baru untuk merawat penyakit kemerosotan neuro.

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I certify that a Thesis Examination Committee has met on 18 January 2017 to conduct the final examination of Hassan Maina Ibrahim on his thesis entitled "Neuroprotective Antioxidant-Based Therapeutic Properties of Malaysian Medicinal Plants in Javanese Medaka (*Oryzias javanicus* Bleeker, 1854)" in accordance with the Universities and University Colleges Act 1971 and the Constitution of the Universiti Putra Malaysia [P.U.(A) 106] 15 March 1998. The Committee recommends that the student be awarded the Doctor of Philosophy.

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This thesis was submitted to the Senate of the Universiti Putra Malaysia and has been accepted as fulfilment of the requirement for the degree of Doctor of Philosophy. The members of the Supervisory Committee were as follows:

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µg	Microgram
AD	Alzheimer's disease
ALS	Amyotrophic lateral sclerosis
ANOVA	Analysis of variance
APP	Amyloid precursor protein
ATC	Acetylcholine
Aβ	Amyloid β peptide
Bd	Bile duct
BTC	Butyrylcholine
Btt	Bend tell tip
Cl	*Curcuma longa*
Cn	*Clinacanthus nutans*
CAT	Catalase
Cb	Curved body
Ce	Coagulated embryo
ChE	Cholinesterase
cPe	Chronic Pericardial edema
Cs	Cloudy swelling
Ct	Curved tail
Cu^{2+}	Copper
Dgm	desquamation intestinal mucosa
DMSO	Dimethyl sulfoxide
DNA	deoxyribonucleic acid

Doa	Dorsal aorta
dpf	Days post fertilization
DPPH	2,2-diphenyl-1-picrylhydrazyl
DTNB	5,5'-dithiobis-2-nitrobenzoic acid
E3M	Embryo media
Em	Epaxial muscle
Epvn	Epigastric vein
Fd	*Ficus deltoidea*
Fe^{3+}	Iron
FET	Fish Embryo Toxicity
FRAP	Ferric Reducing Antioxidant Power
Gb	*Ginkgo biloba*
Gc	Goblet cell
Gm	Gastric mucosa
GPX	Glutathione peroxidases
GSH	Reduced Glutathione peroxidases
GSSG	Oxidized Glutathione peroxidases
H_2O_2	Hydrogen perioxide
HD	Huntington's disease
Hdv	Hydropic degeneration of villi
Hm	Hypaxial muscle
HO	Hydroxyl
Hpa	Hepatic portal artery
Hpf	Hour post fertilization
HPLC	High Performance Liquid Chromatography

Hpt	Hepatocytes
Hpth	Hepatocellular hypotrophy
Hptn	Hepatocellular necrosis
Hpv	Hepatic portal vein
Hss	Horizontal skeletogenous septum
IACUC	Institution of Animal Care and Use Committee
Iar	Intestinal artery
IC_{50}	Inhibitory concentration at 50%
Ict	Interconnective tissues
Ih	Intestinal haemarrhage
Itl	Intestinal lumen
Ivn	Intestinal vein
Kdy	Kidney
Kg	kilogram
Kt	kinked tail
Ktt	kinked tail tip
L	Liter
LC_{50}	Concentration that cause 50% mortality
LC-MS	Liquid Chromatography and Mass Spectrophotometry
Liv	Liver
Mk	*Murraya koenigii*
Mm	*Melastoma malabathricum*
M_1	Initial concentration
M_2	Final concentration
MEM	Medium minimum essential medium

Mg	Milligram
mL	Milliliter
mPe	Mild Pericardial edema
MPTP	1-methyl-4-phenyl-1,2,3,6-tetrahydropyridine
MS	Multiple Sclerosis
Msec	Metaplasia of squamous epithelial cell
Mt	Mitochondrial
MTT	3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide
MW	Molecular Weight
NO	Nitric oxide
O_2	Oxygen
Ovy	Ovary
P.f	*Paederia foetida*
Pm	*Polygonum minus*
Pm1	*Phaleria macrocarpa*
Pac	Pancreas
PBS	Phosphate Buffer Saline
Pcv	Posterior cardinal vein
PD	Parkinson's disease
Pe	Pericardial edema
PEPI	(*Pistacia integerrima* petroleum ether extract) PEPI
PINK1	Putative kinase1
PKC	Protein kinase C
PrP^C	Primarily α-helical structure
PTC	Propionylcholine

PTZ	Pentylenetetrazole
RNA	Ribonucleic acid
ROS	Reactive Oxygen Species
Sbl	Short body length
Sbld	Swimming bladder
Sec	Squamous epithelial cell
Snd	Sinusoid
SOD	Superoxide dismutase
TCM	Traditional complementary medicine
TPTZ	Tripyridyl-s-triazine
Tris–HCl	Tris Hydrochloride
U	Unit
Uh	Unhatched embryo
V_1	Initial volume
V_2	Final volume
vil	villi
Vss	Vertical skelotogenous septum
WHO	World Health Organization
Zn^{2+}	Zinc

CHAPER 1

INTRODUCTION

Epidemiologically, antioxidants have been reported to prevent different types of diseases associated with oxidative stress, such as cardiovascular disease (CVD) and cancer neurodegeneration (Costa *et al.,* 2012). Oxidative stress from mitochondrial dysfunction has been implicated in age-associated neurodegenerative diseases such as A.D (Liu *et al.,* 2016; Chakrabarti *et al.,* 2013), Parkinson's disease (Bu *et al.,* 2015; Hauser & Hastings, 2013), Huntington's disease (Stack *et al.,* 2008; Johri & Beal, 2012), amyotrophic lateral sclerosis (Corrado *et al.,* 2010; Barber & Shaw, 2010) and prion diseases (Yana *et al.,* 2013; Haigh *et al., 2*011). Data obtained from population-based studies in Europe reveal that most of the affected age groups are 65 to 90 year with percentage rate of 6.4% for dementia and 4.4% for Alzheimer's disease AD (Kalaria *et al.,* 2008). Scientist reported the risk age for neurodegenerative diseases is 70 to 90 years and with a prevalence rate of up 9.7% of AD (Vidal *et al.,* 2014). Global prevalence of dementia was estimated to be 3.9% in people aged 60 to 90 years, with the regional prevalence being 1.6% in Africa, 4.0% in China and Western Pacific regions, 4.6% in Latin America, 5.4% in Western Europe, and 6.4% in North America (Prince *et al.,* 2013). Not less than 25 million people are currently affected by dementia worldwide, AD was reported to be most common among others, with about 5 million new cases occurring every year (Qiu *et al.,* 2013; Kuiper *et al.,* 2015). Neurodegenerative diseases are associated with high economic burden, there are approximately 45 million reported cases in the UK, with a cost of €134 billion per annum (Kirk *et al.,* 2015). Patients with dementia display a broad range of cognitive impairments and neuropsychiatric symptoms that can cause significant distress to themselves and caregivers. As a result, individualized and multimodal treatment plans are required. Dementia is usually progressive, and treatment must evolve with time in order to address newly emerging issues. At each stage the psychiatrist should be vigilant for symptoms likely to be present, should identify and treat co-occurring psychiatric and medical conditions, and should help patients and families anticipate future symptoms and the care likely to be required (Aarsland, 2015). The best way to manage neurodegenerative disease is prevention. Some of the most promising strategies for the prevention of dementia include vascular risk factor control, cognitive activity, physical activity, social engagement, diet, and recognition of depression (Middleton & Yaffe, 2009).

Neurodegeneration applied to several conditions that result in progressive changes that lead to the loss of function and/or structure of neurons or complete death of neuron. Neurons are the building block of the nervous system and these include brain and spinal cord. Normally neurons do not undergo regenerative changes or replacement when damage or death. Neurodegenerative disease is associated with some common attributes such as atypical protein change with faulty amino acid degradation and activation, oxidative stress, accumulation of reactive oxygen species, defective energy transformation, impaired mitochondrial function and inflammation of the neurons (Urrutia *et al.,* 2014). The sequences of these incidents cannot be predicted, but oxidative damage to the brain has been shown to be one of the earliest diagnostic

markers. Oxidative stress occurs due to the accumulation of ROS as a result of imbalance between the synthesis and degradation of ROS such as O_2, HO, H_2O_2 (Sahiner *et al.*, 2012). A free radical is described as any species that contains one or more unpaired electrons (Halliwell & Gutteridge, 2015). Therefore, Reactive oxygen species (ROS) is refer to collective term that comprises both oxygen radicals, such as (O_2^-), hydroxyl ($OH^{\cdot}$), peroxyl ($RO_2^{\cdot}$), and hydroperoxyl ($HO_2^{\cdot}$) radicals, and certain nonradical oxidizing agents, such as hydrogen peroxide (H_2O_2), hypochlorous acid (HOCl), and ozone (O_3), that can be converted easily to into radicals (Halliwell & Gutteridge, 2015). ROS are involved in the pathogenesis of several diseases including sepsis, viral infection and non-infectious ailments. ROS are also produced during normal metabolism and are involved in enzymatic reactions, mitochondrial electron transport, signal transduction, activation of nuclear transcription factors, gene expression, and the antimicrobial action of neutrophils and macrophages. Hence, the reducing environment inside cells helps to prevent free radical-mediated damage. This reducing environment is maintained by the action of antioxidant enzymes and substances, such as superoxide dismutase (SOD), catalase, glutathione peroxidase, glutathione, ascorbate (vitamin C), [alpha]-tocopherol (vitamin E), and thioredoxin. Alterations in the redox state and depletion of antioxidants by exposure to oxidants lead to oxidative stress which result in oxidative injury (Lowes *et al.*, 2013). ROS accumulation lead to lipid and protein peroxidation as well as gene or nucleic acid mutation as demonstrated in the pathogenesis of neurodegenerative diseases such as AD and Parkinson disease (Sahiner *et al.*, 2012). A problem associated with various cellular mechanisms which include ATP production, inflammatory response, metabolic and reactive nitrogen species (RNS) such as nitric acid, peroxynitrite ($ONOO^-$) may also be responsible for oxidative stress. Environmental hazards toxicants such as ionization radiation, heavy metals, can predispose to oxidative stress (Nutt, 2015). Cytochrome P450 enzymes, flavor-protein oxidases and peroxisomal enzymes involved in fatty acid biodegradation are another important intracellular sources of ROS (Kramer *et al.*, 2015).

Medicinal herbs are rich in a bioactive compound with antioxidant and nutritive values that can be used to prevent or treat diseases (Manzo *et al.*, 2015). Most of the natural bioactive compound with a wide variety of free radical scavenging molecules and therapeutic effect include phenolic compounds (Phenolic acids, flavonoids, Quinones, coumarins, lignans, Stevens, tannins), nitrogen compounds (alkaloids, amines, betalains), vitamins, terpenoids (including carotenoids), and some other endogenous metabolites, which are rich in antioxidant activity. Due to reliability on medicinal herbs and need for reducing cost of treatment with conventional drugs, medicinal plants is increasing popularity as natural chemotherapeutic agent for various diseases and pathophysiological conditions (Pan *et al.*, 2013). Most of the commonly used conventional chemotherapeutic agent for examples digitoxin, reserpine, tubocurarine, ephedrine, ergometrine, atropine, vinblastine, aspirin, are sourced from medicinal herbs (Stopek, 2015). The discoveries of medicinal herbs as major sources of chemotherapeutic agents lead to increases evaluation of efficacy and efficiency of several extract in industries and research institute. worldwide (Mondal, 2012). For thousands of years, and to date, Asia has been practicing the use of the medicinal plant in the diagnosis and as treatment remedy especially India (Ayurvedic, Unani, Siddha), China (Wu-Hsing), and Japan (Kampo) (Ali, 2014). Most of the commonly used chemotherapeutic agents are made up of plant bio component mixture and may

occasionally content portion of animal organs and minerals to achieved therapeutic goal and synergistic effect. In Malaysia, 87.3-88.9% of herbal therapy is used in the prevention of health problems (Suriyati *et al., 2*011). Malaysia has extensive varieties of different plants species and medicinal herbs for thousands of decades. Approximately RM 4.6 million have been generated annually on the sale of medicinal and aromatic herbal in Malaysian markets with a rapid increase of 15-20% (Jamal *et al.,* 2006; Khatun *et al.,* 2011). Many studies reported high chemotherapeutic potential of *Ficus deltoidea*, *Phaleria macrocarpa* and *Curcuma longa*. Information on whether these plants have neuroprotective potential is very limited. Thus, this project aims to assess the neuroprotective potential of the aforementioned plants.

Human neuroblastoma (SH-SY5Y) cells derived from the human cells line have been widely used as *in vitro* model in neuroscience researchers for examples evaluation of a neurotoxic effect of medicinal agents (Cheung *et al.,* 2009; Constantinescu *et al.,* 2007; Lopes *et al.,* 2010). The cells can be differentiated by Retinoic acid following 7 days post exposure and has the ability to expand in culture prior to differentiation (Sommer *et al.,* 2010). However, some scientist recently report that certain chemicals such as herbimycin A (herb A), 12-O- tetra deconoyl-phorbol-13 acetate (TPA) and dibutyryl cyclic AMP (db AMP) or neurotrophic factors which includes nerve growth factor (NGF) and brain-derived neurotrophic factor (BDNF) with or without extracellular matrix (ECM) gel will enhance neuronal cells differentiation and maintain the viability of RA exposed cells (Encinas *et al.,* 2000; Kume *et al.,* 2008). More attention has been placed on isolating the compounds that are naturally neuroprotectant and may likely have antioxidant and or anti-inflammatory potential (Kwon *et al.,* 2007; Sapkota *et al.,* 2010).

Zebrafish (*Danio rerio)* raised as excellent research model for human and all vertebrate diseases as well as screening of drug activities or medicinal agents (Burgess & Granato, 2007), Scientist reported high homologous genetic similarities between zebrafish and human which made it useful in research beside it low cost, easy handling/maintenance, fast production, transparent body, low generation interval, when compared to other vertebrate model (Egan *et al.,* 2009; Grossman *et al.,* 2010; Wong *et al.,* 2010; Cachat *et al.,* 2013). The zebrafish brain is neuroanatomical and physiologically similar to human apart from minor dissimilarities during the embryonic state (Mahabir *et al., 2*014). Various neurotransmitter system that is similar to all mammals have been demonstrated on zebrafish, this includes dopaminergic (Kastenhuber *et al.,* 2010; Yamamoto *et al., 2*010).

Javanese medaka (*Oryzias javanicus*) are widely distributed in Asia and they are subdivided into 3 subgroups *O. latipa* group, *O. celesensis* group and *O. javanecus* group based on phylogenetic and Karyotype analysis (Kinoshita *et al.,* 2009). Two related species of Javanese medaka (*Oryzias javanicus*); *O. javanecus* and *O. dencena* have been demonstrated to be used as excellent models in research due to their tolerance to wide range of salinity (Stueckle *et al.,* 2009; DeLorenzo *et al.,* 2013; Lavado *et al.,* 2011). Javanese medaka (*Oryzias javanicus*) is distributed throughout Malaysia, Singapore, Indonesia, Thailand and western Borneo commonly present in brackish water (Hubert *et al.,* 2015). Scientific finding on hepatic vitellogenin

concentration and hepatic choriogenin mRNA expression have been reported in *O. javanecus* (Li *et al.,* 2013). Recently, many research work involving the effect of heavy metals on antioxidants and stress responsive gene expression have been demonstrated in Javanese medaka (*Oryzias javanicus*) (Woo *et al.,* 2014).

Thus, the main objective of the research work was to evaluate the toxicity and neuroprotective activities of Malaysian medicinal plants *in vitro* and *in vivo.*

Specific objective

1. To screen the antioxidant and toxicity effects of 10 Malaysian medicinal plants extracts on human neuroblastoma cells (SH-SY5Y cells) and zebrafish (*Danio rerio*) embryo.
2. To evaluate the toxicity and neuroprotective activities of selected medicinal plants on human neuroblastoma cells (SH-SY5Y cells) and adult Javanese medaka (*Oryzias javanicus*).
3. To determine the bioactive compounds in selected plant extracts using high performance liquid chromatography (HPLC) and liquid chromatography and mass spectrophotometry (LCMS)

REFERENCES

Yassin, A., B., Parichehr, Z., Rahmat, H., Ahmad, A., (2011). Evaluation of the oxidative stress and glycemic control status in response to soy in older women with the metabolic syndrome. *Iranian Red Crescent Medical Journal*, *13*(11), 795–804.

A Khan, T., Hassan, I., Ahmad, A., Perveen, A., Aman, S., Quddusi, S., Aliev, G. (2016). Recent updates on the dynamic association between oxidative stress and neurodegenerative disorders. *CNS & Neurological Disorders-Drug Targets (Formerly Current Drug Targets-CNS & Neurological Disorders)*, *15*(3), 310–320.

Aarsland, D. (2015). Cognitive impairment in Parkinson's disease and dementia with Lewy bodies. *Parkinsonism & Related Disorders*, *22 Suppl 1*, S144-8. https://doi.org/10.1016/j.parkreldis.2015.09.034

Abbasi, A. M., Shah, M. H., & Khan, M. A. (2015). *Wild Edible Vegetables of Lesser Himalayas*. Springer.

Abdullah, F., Subramanian, P., Ibrahim, H., Malek, S. N. A., Lee, G. S., & Hong, S. L. (2015). Chemical composition, antifeedant, repellent, and toxicity activities of the rhizomes of galangal, Alpinia galanga against Asian subterranean termites, Coptotermes gestroi and Coptotermes curvignathus (Isoptera: Rhinotermitidae). *Journal of Insect Science*, *15*(1), 7.

Abdullah, Z., Hussain, K., Zhari, I., Rasadah, M. A., Mazura, P., Jamaludin, F., & Sahdan, R. (2009). Evaluation of extracts of leaf of three Ficus deltoidea varieties for antioxidant activities and secondary metabolites. *Pharmacognosy Research*, *1*(4), 216.

Ackerman, J. (2015). Invasive orchids: weeds we hate to love? *Lankesteriana*, *7*(1–2).

Adam, Z., Hamid, M., Ismail, A., & Khamis, S. (2009). Effect of Ficus deltoidea extracts on hepatic basal and insulin-stimulated glucose uptake. *Journal of Biological Sciences*, *9*(8), 796–803.

Adnan, M., Tariq, A., Mussarat, S., Begum, S., AbdEIsalam, N. M., & Ullah, R. (2015). Ethnogynaecological Assessment of Medicinal Plants in Pashtun's Tribal Society. *BioMed Research International*, *2015*.

Aggarwal, B. B., Prasad, S., Reuter, S., Kannappan, R., Yadev, V. R., Park, B., Sung, B. (2011). Identification of Novel Anti-inflammatory Agents from Ayurvedic Medicine for Prevention of Chronic Diseases. *Current Drug Targets*, *12*(11), 1595–1653.

Aguiar, S., & Borowski, T. (2013). Neuropharmacological review of the nootropic herb Bacopa monnieri. *Rejuvenation Research*, *16*(4), 313–326.

Ahmad, R., Baharum, S. N., Bunawan, H., Lee, M., Mohd Noor, N., Rohani, E. R., Zin, N. M. (2014). Volatile profiling of aromatic traditional medicinal plant, Polygonum minus in different tissues and its biological activities. *Molecules*,

19(11), 19220–19242.

Ahmed, T., & Gilani, A.-H. (2009). Inhibitory effect of curcuminoids on acetylcholinesterase activity and attenuation of scopolamine-induced amnesia may explain medicinal use of turmeric in Alzheimer's disease. *Pharmacology Biochemistry and Behavior*, *91*(4), 554–559.

Ahn, S., Basu, R., Smith, M. L., Jiang, L., Lorig, K., Whitelaw, N., & Ory, M. G. (2013). The impact of chronic disease self-management programs: healthcare savings through a community-based intervention. *BMC Public Health*, *13*, 1141. https://doi.org/10.1186/1471-2458-13-1141

Akuodor, G. C., Udia, P. M., Bassey, A., Chilaka, K. C., & Okezie, O. A. (2014). Antihyperglycemic and antihyperlipidemic properties of aqueous root extract of Icacina senegalensis in alloxan induced diabetic rats. *Journal of Acute Disease*, *3*(2), 99–103.

Al-Mubarak, B. R., Bohlega, S. A., Alkhairallah, T. S., Magrashi, A. I., AlTurki, M. I., Khalil, D. S., … Alyemni, E. A. (2015). Parkinson's Disease in Saudi Patients: A Genetic Study. *PloS One*, *10*(8), e0135950.

Al Batran, R., Al-Bayaty, F., Ameen Abdulla, M., Al-Obaidi, J., Mazen, M., Hajrezaei, M., … Talaee, S. (2013). Gastroprotective effects of Corchorus olitorius leaf extract against ethanol-induced gastric mucosal hemorrhagic lesions in rats. *Journal of Gastroenterology and Hepatology*, *28*(8), 1321–1329.

Al Bayaty, F., Abdulla, M., Hassan, M. A., & Masud, M. (2010). Wound healing potential by hyaluronate gel in streptozotocin-induced diabetic rats. *Scientific Research and Essays*, *5*(18), 2756–2760.

Ali, A. A. (2010). The Effect of long term use of glibenclamide on serum and urinary sodium and potassium levels in Type 2 DM patients. *Iraqi J Pharm Sci*, *19*, 58–61.

Ali, S., Champagne, D. L., & Richardson, M. K. (2012). Behavioral profiling of zebrafish embryos exposed to a panel of 60 water-soluble compounds. *Behavioural Brain Research*, *228*(2), 272–283. https://doi.org/10.1016/j.bbr.2011.11.020

Ali Alsarhan, N. S. (2014). Review on Some Malaysian Traditional Medicinal Plants with Therapeutic Properties. *Journal of Basic & Applied Sciences*, *10*, 149–159. https://doi.org/10.6000/1927-5129.2014.10.20

Alothman, M., Bhat, R., & Karim, A. A. (2009). Antioxidant capacity and phenolic content of selected tropical fruits from Malaysia, extracted with different solvents. *Food Chemistry*, *115*(3), 785–788.

Altaf, R., Asmawi, M. Z. Bin, Dewa, A., Sadikun, A., & Umar, M. I. (2013). Phytochemistry and medicinal properties of Phaleria macrocarpa (Scheff.) Boerl. extracts. *Pharmacognosy Reviews*, *7*(13), 73.

Alvarez, X. A., Cacabelos, R., Sampedro, C., Aleixandre, M., Linares, C., Granizo, E., … Moessler, H. (2011). Efficacy and safety of Cerebrolysin in moderate to

moderately severe Alzheimer's disease: results of a randomized, double-blind, controlled trial investigating three dosages of Cerebrolysin. *European Journal of Neurology*, *18*(1), 59–68.

Amelio, I., Cutruzzolá, F., Antonov, A., Agostini, M., & Melino, G. (2014). Serine and glycine metabolism in cancer. *Trends in Biochemical Sciences*. https://doi.org/10.1016/j.tibs.2014.02.004

Anastasi, J. K., Chang, M., & Capili, B. (2011). Herbal supplements: talking with your patients. *The Journal for Nurse Practitioners*, *7*(1), 29–35.

Andersson, D. C., Betzenhauser, M. J., Reiken, S., Meli, A. C., Umanskaya, A., Xie, W., Marks, A. R. (2011). Ryanodine receptor oxidation causes intracellular calcium leak and muscle weakness in aging. *Cell Metabolism*, *14*(2), 196–207.

Ansari, M. A., & Scheff, S. W. (2010). Oxidative stress in the progression of Alzheimer disease in the frontal cortex. *Journal of Neuropathology and Experimental Neurology*, *69*(2), 155.

Arlt, V. M., Pfohl-Leszkowicz, A., Cosyns, J.-P., & Schmeiser, H. H. (2001). Analyses of DNA adducts formed by ochratoxin A and aristolochic acid in patients with Chinese herbs nephropathy. *Mutation Research/Genetic Toxicology and Environmental Mutagenesis*, *494*(1), 143–150.

Arnal, E., Peris-Martínez, C., Menezo, J. L., Johnsen-Soriano, S., & Romero, F. J. (2011). Oxidative stress in keratoconus? *Investigative Ophthalmology & Visual Science*, *52*(12), 8592–8597.

Asaduzzaman, M., Ahammad, A. S., Asakawa, S., Kinoshita, S., & Watabe, S. (2016). 5′-flanking sequences of zebrafish fast myosin heavy chain genes regulate unique expression in the anterior, medial subsection and posterior tail somites of the skeletal muscle. *Comparative Biochemistry and Physiology Part B: Biochemistry and Molecular Biology*, *191*, 1–12.

Aschner, M., Erikson, K. M., Hernández, E. H., & Tjalkens, R. (2009). Manganese and its role in Parkinson's disease: from transport to neuropathology. *Neuromolecular Medicine*, *11*(4), 252–266.

Aslam, M. S., Ahmad, M. S., & Mamat, A. S. (2015). Pharmacological Potential of Vitexin. *Indian Research Journal of Pharmacy and Science*, *2*(2), 114–122.

Association*, A. (2015). 2015 Alzheimer's disease facts and figures. *Alzheimer's & Dementia*, *11*(3), 332–384. https://doi.org/http://dx.doi.org/10.1016/j.jalz.2015.02.003

Austin, S., Klimcakova, E., & St-Pierre, J. (2011). Impact of PGC-1α on the topology and rate of superoxide production by the mitochondrial electron transport chain. *Free Radical Biology and Medicine*, *51*(12), 2243–2248.

Awoniyi, D. O. (2010). *The role of rooibos (Aspalathus linearis), green tea (Camellia sinensis) and commercially available rooibos and green tea antioxidant supplements on rat testicular and epididymal function*. CAPE PENINSULA UNIVERSITY OF TECHNOLOGY.

Awoniyi, D. O., Aboua, Y. G., Marnewick, J. L., Du Plesis, S. S., & Brooks, N. L. (2013). Protective effects of rooibos (Aspalathus linearis), green tea (Camellia sinensis) and commercial supplements on testicular tissue of oxidative stressinduced rats. *African Journal of Biotechnology*, *10*(75), 17317–17322.

Ayotunde, E. O., & Ofem, B. O. (2008). Acute and chronic toxicity of pawpaw (Carica papaya) seed powder to adult Nile tilapia (Oreochromis niloticus Linne 1757). *African Journal of Biotechnology*, *7*(13).

Azmir, J., Zaidul, I. S. M., Rahman, M. M., Sharif, K. M., Sahena, F., Jahurul, M. H. A., & Mohamed, A. (2014). Optimization of oil yield of Phaleria macrocarpa seed using response surface methodology and its fatty acids constituents. *Industrial Crops and Products*, *52*, 405–412.

Bagheri, M., Joghataei, M.-T., Mohseni, S., & Roghani, M. (2011). Genistein ameliorates learning and memory deficits in amyloid β (1–40) rat model of Alzheimer's disease. *Neurobiology of Learning and Memory*, *95*(3), 270–276.

Ballard, C. G., Gauthier, S., Cummings, J. L., Brodaty, H., Grossberg, G. T., Robert, P., & Lyketsos, C. G. (2009). Management of agitation and aggression associated with Alzheimer disease. *Nature Reviews Neurology*, *5*(5), 245–255.

Barber, S. C., & Shaw, P. J. (2010). Oxidative stress in ALS: key role in motor neuron injury and therapeutic target. *Free Radical Biology and Medicine*, *48*(5), 629–641.

Barbosa, D. J., Capela, J. P., de Lourdes Bastos, M., & Carvalho, F. (2015). In vitro models for neurotoxicology research. *Toxicology Research*, *4*(4), 801–842.

Barros, F., Dykes, L., Awika, J. M., & Rooney, L. W. (2013). Accelerated solvent extraction of phenolic compounds from sorghum brans. *Journal of Cereal Science*, *58*(2), 305–312. https://doi.org/10.1016/j.jcs.2013.05.011

Basu, S., Je, G., & Kim, Y.-S. (2015). Transcriptional mutagenesis by 8-oxodG in α-synuclein aggregation and the pathogenesis of Parkinson's disease. *Experimental & Molecular Medicine*, *47*(8), e179.

Becking, K., Boschloo, L., Vogelzangs, N., Haarman, B. C. M., Riemersma-van der Lek, R., Penninx, B. W. J. H., & Schoevers, R. A. (2013). The association between immune activation and manic symptoms in patients with a depressive disorder. *Translational Psychiatry*, *3*(10), e314. https://doi.org/10.1038/tp.2013.87

Belviranlı, M., Gökbel, H., Okudan, N., & Büyükbaş, S. (2013). Effects of grape seed polyphenols on oxidative damage in liver tissue of acutely and chronically exercised rats. *Phytotherapy Research*, *27*(5), 672–677.

Benabent, M., Vilanova, E., Sogorb, M. Á., & Estévez, J. (2014). Cholinesterase assay by an efficient fixed time endpoint method. *MethodsX*, *1*, 258–263. https://doi.org/10.1016/j.mex.2014.10.010

Benson, K. F., Newman, R. A., & Jensen, G. S. (2015). Antioxidant, anti-inflammatory, anti-apoptotic, and skin regenerative properties of an Aloe vera-

based extract of Nerium oleander leaves (nae-8®). *Clinical, Cosmetic and Investigational Dermatology*, *8*, 239.

Bernardi, C. C., Ribeiro, E. de S. F., Cavalli, I. J., Chautard-Freire-Maia, E. A., & Souza, R. L. R. (2010). Amplification and deletion of the ACHE and BCHE cholinesterase genes in sporadic breast cancer. *Cancer Genetics and Cytogenetics*, *197*(2), 158–165. https://doi.org/10.1016/j.cancergencyto.2009.10.011

Bhardwaj, M., Paul, S., Jakhar, R., & Kang, S. C. (2015). Potential role of vitexin in alleviating heat stress-induced cytotoxicity: Regulatory effect of Hsp90 on ER stress-mediated autophagy. *Life Sciences*, *142*, 36–48. https://doi.org/10.1016/j.lfs.2015.10.012

Bieniek, K. F., Ross, O. A., Cormier, K. A., Walton, R. L., Soto-Ortolaza, A., Johnston, A. E., … Dickson, D. W. (2015). Chronic traumatic encephalopathy pathology in a neurodegenerative disorders brain bank. *Acta Neuropathologica*, *130*(6), 877–889. https://doi.org/10.1007/s00401-015-1502-4

Bilder, G. E. (2016). *Human Biological Aging: From Macromolecules To Organ Systems*. John Wiley & Sons.

Bin Zakaria, M., & Mohd, M. A. (2010). *Traditional Malay medicinal plants*. ITBM.

Blennow, K., de Leon, M. J., & Zetterberg, H. (2006). Alzheimer's disease. *The Lancet*, *368*, 387–403. https://doi.org/10.1016/S0140-6736(06)69113-7

Blennow, K., Hampel, H., Weiner, M., & Zetterberg, H. (2010). Cerebrospinal fluid and plasma biomarkers in Alzheimer disease. *Nature Reviews Neurology*, *6*(3), 131–144.

Blesa, J., Trigo-Damas, I., Quiroga-Varela, A., & Jackson-Lewis, V. R. (2015). Oxidative stress and Parkinson's disease. *Frontiers in Neuroanatomy*, *9*.

Boeing, H., Bechthold, A., Bub, A., Ellinger, S., Haller, D., Kroke, A., … Watzl, B. (2012). Critical review: Vegetables and fruit in the prevention of chronic diseases. *European Journal of Nutrition*. https://doi.org/10.1007/s00394-012-0380-y

Bontempo, P., Doto, A., Miceli, M., Mita, L., Benedetti, R., Nebbioso, A., Sica, V. (2012). Psidium guajava L. anti-neoplastic effects: induction of apoptosis and cell differentiation. *Cell Proliferation*, *45*(1), 22–31.

Bournat, J. C., & Brown, C. W. (2010). Mitochondrial dysfunction in obesity. *Current Opinion in Endocrinology, Diabetes and Obesity*, *17*(5), 446–452.

Brand, M. D. (2010). The sites and topology of mitochondrial superoxide production. *Experimental Gerontology*, *45*(7), 466–472.

Braun, L., & Cohen, M. (2015). *Herbs and Natural Supplements, Volume 2: An Evidence-Based Guide* (Vol. 2). Elsevier Health Sciences.

Braunbeck, T., Kais, B., Lammer, E., Otte, J., Schneider, K., Stengel, D., & Strecker, R. (2015). The fish embryo test (FET): origin, applications, and future.

Environmental Science and Pollution Research, *22*(21), 16247–16261.

Brettschneider, J., Del Tredici, K., Lee, V. M.-Y., & Trojanowski, J. Q. (2015). Spreading of pathology in neurodegenerative diseases: a focus on human studies. *Nature Reviews Neuroscience*, *16*(2), 109–120.

Brieger, K., Schiavone, S., Miller Jr, F. J., & Krause, K.-H. (2012). Reactive oxygen species: from health to disease. *Swiss Medical Weekly*, *142*, w13659.

Brown, D. R. (2005). Neurodegeneration and oxidative stress: prion disease results from loss of antioxidant defence. *Folia Neuropathologica*, *43*(4), 229.

Bu, X.-L., Yao, X.-Q., Jiao, S.-S., Zeng, F., Liu, Y.-H., Xiang, Y., … Cao, H.-Y. (2015). A study on the association between infectious burden and Alzheimer's disease. *European Journal of Neurology*, *22*(12), 1519–1525.

Bunawan, H., Amin, N. M., Bunawan, S. N., Baharum, S. N., & Mohd Noor, N. (2014). Ficus Deltoidea Jack: A review on its phytochemical and pharmacological importance. *Evidence-Based Complementary and Alternative Medicine*, *2014*.

Burgess, H. A., & Granato, M. (2007). Sensorimotor gating in larval zebrafish. *The Journal of Neuroscience*, *27*(18), 4984–4994.

Butterfield, D. A., Hardas, S. S., & Lange, M. L. B. (2010). Oxidatively modified glyceraldehyde-3-phosphate dehydrogenase (GAPDH) and Alzheimer's disease: many pathways to neurodegeneration. *Journal of Alzheimer's Disease*, *20*(2), 369–393.

Carlson, CD, Sethuraman, G, Andersen SW. (2015). Safety of solanezumab in the expedition-ext study up to 2 years in a mild to moderate Alzheimer's disease population. *Alzheimer's and Dementia*. Retrieved from

Cachat, J., Kyzar, E. J., Collins, C., Gaikwad, S., Green, J., Roth, A., … Landsman, S. (2013). Unique and potent effects of acute ibogaine on zebrafish: the developing utility of novel aquatic models for hallucinogenic drug research. *Behavioural Brain Research*, *236*, 258–269.

Campbell, P. T., Gross, M. D., Potter, J. D., Schmitz, K. H., Duggan, C., McTiernan, A., & Ulrich, C. M. (2010). Effect of exercise on oxidative stress: a 12-month randomized, controlled trial. *Medicine and Science in Sports and Exercise*, *42*(8), 1448.

Catindig, J.-A. S., Venketasubramanian, N., Ikram, M. K., & Chen, C. (2012). Epidemiology of dementia in Asia: insights on prevalence, trends and novel risk factors. *Journal of the Neurological Sciences*, *321*(1), 11–16.

Chae, H., & Gilon, P. (2015). Can Tea Extracts Exert a Protective Effect Against Diabetes by Reducing Oxidative Stress and Decreasing Glucotoxicity in Pancreatic β-Cells? *Diabetes & Metabolism Journal*, *39*(1), 27–30.

Chakrabarti, S., Sinha, M., G Thakurta, I., Banerjee, P., & Chattopadhyay, M. (2013). Oxidative stress and amyloid beta toxicity in Alzheimer's disease: intervention in a complex relationship by antioxidants. *Current Medicinal Chemistry*, *20*(37),

4648–4664.

Chan, W. Y., Ng, T. B., Lam, J. S. Y., Wong, J. H., Chu, K. T., Ngai, P. H. K., Wang, H. X. (2010). The mushroom ribosome-inactivating protein lyophyllin exerts deleterious effects on mouse embryonic development in vitro. *Applied Microbiology and Biotechnology*, *85*(4), 985–993. https://doi.org/10.1007/s00253-009-2048-y

Chanda, S., Sarethy, I. P., De, B., & Singh, K. (2013). Paederia foetida—a promising ethno-medicinal tribal plant of northeastern India. *Journal of Forestry Research*, *24*(4), 801–808.

Chayaratanasin, P., Barbieri, M. A., Suanpairintr, N., & Adisakwattana, S. (2015). Inhibitory effect of Clitoria ternatea flower petal extract on fructose-induced protein glycation and oxidation-dependent damages to albumin in vitro. *BMC Complementary and Alternative Medicine*, *15*(1), 1.

Chen, P.-C., Vargas, M. R., Pani, A. K., Smeyne, R. J., Johnson, D. A., Kan, Y. W., & Johnson, J. A. (2009). Nrf2-mediated neuroprotection in the MPTP mouse model of Parkinson's disease: Critical role for the astrocyte. *Proceedings of the National Academy of Sciences*, *106*(8), 2933–2938.

Chen, X., Li, L., Cheng, J., Chan, L. L., Wang, D.-Z., Wang, K.-J., … Cheng, S. H. (2011). Molecular staging of marine medaka: a model organism for marine ecotoxicity study. *Marine Pollution Bulletin*, *63*(5), 309–317.

Chen, Y. C., Smith, D. H., & Meaney, D. F. (2009). In-vitro approaches for studying blast-induced traumatic brain injury. *Journal of Neurotrauma*, *26*(6), 861–876.

Chen, Y., Wang, S., Zhang, L., Xie, T., Song, S., Huang, J., … Liu, B. (2015). Identification of ULK1 as a novel biomarker involved in miR-4487 and miR-595 regulation in neuroblastoma SH-SY5Y cell autophagy. *Scientific Reports*, *5*.

Cheung, Y.-T., Lau, W. K.-W., Yu, M.-S., Lai, C. S.-W., Yeung, S.-C., So, K.-F., & Chang, R. C.-C. (2009). Effects of all-trans-retinoic acid on human SH-SY5Y neuroblastoma as in vitro model in neurotoxicity research. *NeuroToxicology*, *30*(1), 127–135. https://doi.org/10.1016/j.neuro.2008.11.001

Chin-Chan, M., Navarro-Yepes, J., & Quintanilla-Vega, B. (2015). Environmental pollutants as risk factors for neurodegenerative disorders: Alzheimer and Parkinson diseases. *Frontiers in Cellular Neuroscience*, *9*.

Chithra, M. G., Deepamol, G. S., Hemanthakumar, A. S., Padmesh, P., & Preetha, T. S. (2016). Evaluation of phyto-components using ftir spectroscopy and antibacterial activities of bioactive constituents from aerial parts of *Clinacanthus nutans* (burn. f.) lindau.

Choi, J. S., Islam, M. N., Ali, M. Y., Kim, E. J., Kim, Y. M., & Jung, H. A. (2014). Effects of C-glycosylation on anti-diabetic, anti-Alzheimer's disease and anti-inflammatory potential of apigenin. *Food and Chemical Toxicology*, *64*, 27–33.

Choi, J. S., Nurul Islam, M., Yousof Ali, M., Kim, E. J., Kim, Y. M., & Jung, H. A. (2014). Effects of C-glycosylation on anti-diabetic, anti-Alzheimer's disease and

anti-inflammatory potential of apigenin. *Food and Chemical Toxicology*, *64*, 27–33. https://doi.org/10.1016/j.fct.2013.11.020

Chong, S. C., Dollah, M. A., Chong, P. P., & Maha, A. (2011). Phaleria macrocarpa (Scheff.) Boerl fruit aqueous extract enhances LDL receptor and PCSK9 expression in vivo and in vitro. *Journal of Ethnopharmacology*, *137*(1), 817–827.

Chow, W.-H., Dong, L. M., & Devesa, S. S. (2010). Epidemiology and risk factors for kidney cancer. *Nature Reviews Urology*, *7*(5), 245–257.

Christapher, P. V., Xin, T. Y., Kiun, C. F., Leng, L. C., Fu, N. G., Yuan, G. L., Vikneswaran, M. (2015). Evaluation of analgesic, anti-inflammatory, antipyretic and antiulcer effect of aqueous and methanol extracts of leaves of Polygonum minus Huds.(Polygonaceae) in rodents. *Archives of Medicine and Health Sciences*, *3*(1), 12.

Chuah, L. O., Ho, W. Y., Beh, B. K., & Yeap, S. K. (2013). Updates on antiobesity effect of garcinia origin (-)-HCA. *Evidence-Based Complementary and Alternative Medicine*, *2013*.

Circu, M. L., & Aw, T. Y. (2010). Reactive oxygen species, cellular redox systems, and apoptosis. *Free Radical Biology & Medicine*, *48*(6), 749–62. https://doi.org/10.1016/j.freeradbiomed.2009.12.022

Cizmas, L., Sharma, V. K., Gray, C. M., & McDonald, T. J. (2015). Pharmaceuticals and personal care products in waters: occurrence, toxicity, and risk. *Environmental Chemistry Letters*, *13*(4), 381–394.

Claramunt, R. M., Bouissane, L., Cabildo, M. P., Cornago, M. P., Elguero, J., Radziwon, A., & Medina, C. (2009). Synthesis and biological evaluation of curcuminoid pyrazoles as new therapeutic agents in inflammatory bowel disease: effect on matrix metalloproteinases. *Bioorganic & Medicinal Chemistry*, *17*(3), 1290–1296.

Cobley, J. N., McGlory, C., Morton, J. P., & Close, G. L. (2011). N-Acetylcysteine's attenuation of fatigue after repeated bouts of intermittent exercise: practical implications for tournament situations. *Int J Sport Nutr Exerc Metab*, *21*(6), 451–61.

Constantinescu, R., Constantinescu, A. T., Reichmann, H., & Janetzky, B. (2007). *Neuronal differentiation and long-term culture of the human neuroblastoma line SH-SY5Y*. Springer.

Corn, S. D., & Barstow, T. J. (2011). Effects of oral N-acetylcysteine on fatigue, critical power, and W′ in exercising humans. *Respiratory Physiology & Neurobiology*, *178*(2), 261–268.

Corrado, L., Del Bo, R., Castellotti, B., Ratti, A., Cereda, C., Penco, S., … Pensato, V. (2010). Mutations of FUS gene in sporadic amyotrophic lateral sclerosis. *Journal of Medical Genetics*, *47*(3), 190–194.

Costa, N. R., Silva, R. O., Nicolau, L. A., Lucetti, L. T., Santana, A. P. M., Aragão, K. S., Barbosa, A. L. (2013). Role of soluble guanylate cyclase activation in the

gastroprotective effect of the HO-1/CO pathway against alendronate-induced gastric damage in rats. *European Journal of Pharmacology*, *700*(1), 51–59.

Da Costa, L. A., Badawi, A., & El-Sohemy, A. (2012). Nutrigenetics and modulation of oxidative stress. *Annals of Nutrition and Metabolism*. https://doi.org/10.1159/000337311

Dai, D.-F., Chiao, Y. A., Marcinek, D. J., Szeto, H. H., & Rabinovitch, P. S. (2014). Mitochondrial oxidative stress in aging and healthspan. *Longev Healthspan*, *3*(6), 1–22.

Dalle-Donne, I., Rossi, R., Colombo, G., Giustarini, D., & Milzani, A. (2009). Protein S-glutathionylation: a regulatory device from bacteria to humans. *Trends in Biochemical Sciences*, *34*(2), 85–96.

Das, A., Ghosh, I., & Mukherjee, A. (2015). Garcinia indica fruit extract induces genotoxicity in mice. *The Nucleus*, 1–6.

Das, M. C., Sandhu, P., Gupta, P., Rudrapaul, P., & De, U. C. (2016). Attenuation of Pseudomonas aeruginosa biofilm formation by Vitexin : A combinatorial study with azithromycin and gentamicin. *Nature Publishing Group*, (October 2015), 1–13. https://doi.org/10.1038/srep23347

Das, N., Islam, M. E., Jahan, N., Islam, M. S., Khan, A., Islam, M. R., & Parvin, M. S. (2014). Antioxidant activities of ethanol extracts and fractions of Crescentia cujete leaves and stem bark and the involvement of phenolic compounds. *BMC Complementary and Alternative Medicine*, *14*(1), 45. https://doi.org/10.1186/1472-6882-14-45

De, L. C. (2015). *Commercial Orchids*. Walter de Gruyter GmbH & Co KG.

Decressac, M., Volakakis, N., Björklund, A., & Perlmann, T. (2013). NURR1 in Parkinson disease—from pathogenesis to therapeutic potential. *Nature Reviews Neurology*, *9*(11), 629–636.

Deguchi, Y., & Miyazaki, K. (2010). Anti-hyperglycemic and anti-hyperlipidemic effects of guava leaf extract. *Nutrition & Metabolism*, *7*(1), 1.

DeLorenzo, M. E., Danese, L. E., & Baird, T. D. (2013). Influence of increasing temperature and salinity on herbicide toxicity in estuarine phytoplankton. *Environmental Toxicology*, *28*(7), 359–371.

Demain, A. L., & Vaishnav, P. (2011). Natural products for cancer chemotherapy. *Microbial Biotechnology*, *4*(6), 687–699.

DESA, U. (2015). World population projected to reach 9.7 billion by 2050 | UN DESA | United Nations Department of Economic and Social Affairs. Retrieved from

Devi, G. P., Ahmed, K. B. A., Varsha, M. S., Shrijha, B. S., Lal, K. S., Anbazhagan, V., & Thiagarajan, R. (2015). Sulfidation of silver nanoparticle reduces its toxicity in zebrafish. *Aquatic Toxicology*, *158*, 149–156.

Devinsky, O., Gazzola, D., & LaFrance, W. C. (2011). Differentiating between nonepileptic and epileptic seizures. *Nature Reviews. Neurology*, *7*(4), 210–220.

https://doi.org/10.1038/nrneurol.2011.24

DeVivo, M. J., Biering-Sørensen, F., New, P., & Chen, Y. (2011). Standardization of data analysis and reporting of results from the International Spinal Cord Injury Core Data Set. *Spinal Cord*, *49*, 596–599. https://doi.org/10.1038/sc.2010.172

Di Carlo, M., Giacomazza, D., Picone, P., Nuzzo, D., & San Biagio, P. L. (2012). Are oxidative stress and mitochondrial dysfunction the key players in the neurodegenerative diseases? *Free Radical Research*, *46*(11), 1327–1338.

Donath, M. Y., & Shoelson, S. E. (2011). Type 2 diabetes as an inflammatory disease. *Nature Reviews Immunology*, *11*(2), 98–107.

Dong, S., Kang, M., Wu, X., & Ye, T. (2014). Development of a promising fish model (Oryzias melastigma) for assessing multiple responses to stresses in the marine environment. *BioMed Research International*, *2014*.

Doody, R. S., Ferris, S. H., Salloway, S., Sun, Y., Goldman, R., Watkins, W. E., Murthy, A. K. (2009). Donepezil treatment of patients with MCI A 48-week randomized, placebo-controlled trial. *Neurology*, *72*(18), 1555–1561.

Doyle, K. M., Kennedy, D., Gorman, A. M., Gupta, S., Healy, S. J., & Samali, A. (2011). Unfolded proteins and endoplasmic reticulum stress in neurodegenerative disorders. *Journal of Cellular and Molecular Medicine*, *15*(10), 2025–2039.

Dridi, S., & Taouis, M. (2009). Adiponectin and energy homeostasis: consensus and controversy. *The Journal of Nutritional Biochemistry*, *20*(11), 831–839.

Duan, J., Yu, Y., Shi, H., Tian, L., Guo, C., Huang, P., … Sun, Z. (2013). Toxic Effects of Silica Nanoparticles on Zebrafish Embryos and Larvae. *PLOSone*, *8*(9), 4–12. https://doi.org/10.1371/journal.pone.0074606

Dubey, J., Ratnakaran, N., & Koushika, S. P. (2015). Neurodegeneration and microtubule dynamics: death by a thousand cuts. *Frontiers in Cellular Neuroscience*, *9*.

Dulay, S. B., Gransee, R., Julich, S., & Tomaso, H. (2014). Automated microfluidically controlled electrochemical biosensor for the rapid and highly sensitive detection of Francisella tularensis. *Biosensors and Bioelectronics*, *59*, 342–349.

Dutta, B. K., & Dutta, P. K. (2005). Potential of ethnobotanical studies in North East India: An overview. *Indian Journal of Traditional Knowledge*, *4*(1), 7–14.

Dwane, S., Durack, E., & Kiely, P. A. (2013). Optimising parameters for the differentiation of SH-SY5Y cells to study cell adhesion and cell migration. *BMC Research Notes*, *6*(1), 366. https://doi.org/10.1186/1756-0500-6-366

Dwivedi, S. (2015). Time to sensitize medical graduates to the Indian systems of medicine and homeopathy. *Indian Journal of Pharmacology*, *47*(3), 338.

Easmin, M., Sarker, M., Islam, Z., Ferdosh, S., Shamsudin, S. H., Yunus, K. Bin, Akanda, M. (2015). Bioactive compounds and advanced processing technology: Phaleria macrocarpa (sheff.) Boerl, a review. *Journal of Chemical Technology*

and Biotechnology, *90*(6), 981–991.

Edwards, S. E., da Costa Rocha, I., Williamson, E. M., & Heinrich, M. (2015). *Phytopharmacy: An Evidence-Based Guide to Herbal Medicinal Products*. John Wiley & Sons.

Egan, R. J., Bergner, C. L., Hart, P. C., Cachat, J. M., Canavello, P. R., Elegante, M. F., … Tien, D. H. (2009). Understanding behavioral and physiological phenotypes of stress and anxiety in zebrafish. *Behavioural Brain Research*, *205*(1), 38–44.

El-Sherbiny, D. A., Khalifa, A. E., Attia, A. S., & Eldenshary, E. E.-D. S. (2003). Hypericum perforatum extract demonstrates antioxidant properties against elevated rat brain oxidative status induced by amnestic dose of scopolamine. *Pharmacology Biochemistry and Behavior*, *76*(3), 525–533.

Emanuele, M., & Chieregatti, E. (2015). Mechanisms of alpha-synuclein action on neurotransmission: cell-autonomous and non-cell autonomous role. *Biomolecules*, *5*(2), 865–892.

Encinas, M., Iglesias, M., Liu, Y., Wang, H., Muhaisen, A., Cena, V., … Comella, J. X. (2000). Sequential treatment of SH-SY5Y cells with retinoic acid and brain-derived neurotrophic factor gives rise to fully differentiated, neurotrophic factor-dependent, human neuron-like cells. *Journal of Neurochemistry*, *75*(3), 991–1003.

Eyo, J. E., Levi, C. A., Asogwa, C. N., Odii, E. C., Chukwuka, C. O., Ivoke, N., Onyeke, C. C. (2013). Toxicity and effect of Carica papaya seed aqueous extract on liver biomarkers of Clarias gariepinus. *International Journal of Indigenous Medicinal Plants*, *46*(3), 1301–1307.

Fabbrini, E., Sullivan, S., & Klein, S. (2010). Obesity and nonalcoholic fatty liver disease: biochemical, metabolic, and clinical implications. *Hepatology*, *51*(2), 679–689.

Farasat, M., Khavari-Nejad, R.-A., Nabavi, S. M. B., & Namjooyan, F. (2014). Antioxidant activity, total phenolics and flavonoid contents of some edible green seaweeds from northern coasts of the Persian Gulf. *Iranian Journal of Pharmaceutical Research*, *13*(1), 163–170.

Farlow, M. R., Salloway, S., Tariot, P. N., Yardley, J., Moline, M. L., Wang, Q., Satlin, A. (2010). Effectiveness and tolerability of high-dose (23 mg/d) versus standard-dose (10 mg/d) donepezil in moderate to severe alzheimer's disease: a 24-week, randomized, double-blind study. *Clinical Therapeutics*, *32*(7), 1234–1251.

Fermoselle, C., García-Arumí, E., Puig-Vilanova, E., Andreu, A. L., Urtreger, A. J., de Kier Joffé, E. D. B., … Barreiro, E. (2013). Mitochondrial dysfunction and therapeutic approaches in respiratory and limb muscles of cancer cachectic mice. *Experimental Physiology*, *98*(9), 1349–1365.

Fernández-Sánchez, A., Madrigal-Santillán, E., Bautista, M., Esquivel-Soto, J., Morales-González, Á., Esquivel-Chirino, C., … Morales-González, J. A. (2011).

Inflammation, oxidative stress, and obesity. *International Journal of Molecular Sciences*, *12*(5), 3117–3132.

Ferraro, G., & Brody, E. K. (2015). *Cultural Dimension of Global Business*. Routledge.

Ferreira, F. D., Kemmelmeier, C., Arrotéia, C. C., Da Costa, C. L., Mallmann, C. A., Janeiro, V., … Machinski, M. (2013). Inhibitory effect of the essential oil of Curcuma longa L. and curcumin on aflatoxin production by Aspergillus flavus Link. *Food Chemistry*, *136*(2), 789–793. https://doi.org/10.1016/j.foodchem.2012.08.003

Ferreira, L. F., Campbell, K. S., & Reid, M. B. (2011). N-acetylcysteine in handgrip exercise: plasma thiols and adverse reactions. *International Journal of Sport Nutrition and Exercise Metabolism*, *21*(2), 146.

Fineberg, N. A., Haddad, P. M., Carpenter, L., Gannon, B., Sharpe, R., Young, A. H., Nutt, D. (2013). The size, burden and cost of disorders of the brain in the UK. *Journal of Psychopharmacology*, 269881113495118.

Fischer, R., & Maier, O. (2015). Interrelation of oxidative stress and inflammation in neurodegenerative disease: role of TNF. *Oxidative Medicine and Cellular Longevity*, *2015*.

Fridlender, M., Kapulnik, Y., & Koltai, H. (2015). Plant derived substances with anti-cancer activity: from folklore to practice. *Frontiers in Plant Science*, *6*.

Gastaldelli, A. (2011). Role of beta-cell dysfunction, ectopic fat accumulation and insulin resistance in the pathogenesis of type 2 diabetes mellitus. *Diabetes Research and Clinical Practice*, *93*, S60–S65.

Geda, Y. E., Roberts, R. O., Knopman, D. S., Christianson, T. J., Pankratz, V. S., Ivnik, R. J., Rocca, W. A. (2010). Physical exercise, aging, and mild cognitive impairment: a population-based study. *Archives of Neurology*, *67*(1), 80–86.

George, A., Chinnappan, S., Chintamaneni, M., Kotak, V., Choudhary, Y., Kueper, T., & Radhakrishnan, A. K. (2014). Anti-inflammatory effects of Polygonum minus (Huds) extract (Lineminus™) in in-vitro enzyme assays and carrageenan induced paw edema. *BMC Complementary and Alternative Medicine*, *14*(1), 355.

Ghasemzadeh, A., Jaafar, H. Z., & Rahmat, A. (2010). Antioxidant activities, total phenolics and flavonoids content in two varieties of Malaysia young ginger (Zingiber officinale Roscoe). *Molecules*, *15*(6), 4324–4333.

Ghasemzadeh, A., Jaafar, H. Z., Rahmat, A., & Ashkani, S. (2015). Secondary metabolites constituents and antioxidant, anticancer and antibacterial activities of Etlingera elatior (Jack) RM Sm grown in different locations of Malaysia. *BMC Complementary and Alternative Medicine*, *15*(1), 1.

Gidday, J. M. (2015). Extending injury-and disease-resistant CNS phenotypes by repetitive epigenetic conditioning. *Frontiers in Neurology*, *6*.

Gill, S. S., Anjum, N. A., Hasanuzzaman, M., Gill, R., Trivedi, D. K., Ahmad, I., Tuteja, N. (2013). Glutathione and glutathione reductase: A boon in disguise for

plant abiotic stress defense operations. *Plant Physiology and Biochemistry*. https://doi.org/10.1016/j.plaphy.2013.05.032

Ginis, K. M., Hicks, A. L., Latimer, A. E., Warburton, D. E. R., Bourne, C., Ditor, D. S., McIlraith, A. (2011). The development of evidence-informed physical activity guidelines for adults with spinal cord injury. *Spinal Cord*, *49*(11), 1088–1096.

Goessling, W., & North, T. E. (2014). Repairing quite swimmingly: advances in regenerative medicine using zebrafish. *Disease Models and Mechanisms*, *7*(7), 769–776.

Gogoi, B., & Zaman, K. (2013). Phytochemical Constituents of Some Medicinal Plant Species Used in Recipe During'Bohag Bihu'in Assam. *Journal of Pharmacognosy and Phytochemistry*, *2*(2).

Grossman, L., Utterback, E., Stewart, A., Gaikwad, S., Chung, K. M., Suciu, C., Tan, J. (2010). Characterization of behavioral and endocrine effects of LSD on zebrafish. *Behavioural Brain Research*, *214*(2), 277–284.

Gruol, D. L. (2015). IL-6 regulation of synaptic function in the CNS. *Neuropharmacology*, *96*, 42–54.

Guarnieri, S., Pilla, R., Morabito, C., Sacchetti, S., Mancinelli, R., Fanò, G., & Mariggiò, M. A. (2009). Extracellular guanosine and GTP promote expression of differentiation markers and induce S-phase cell-cycle arrest in human SH-SY5Y neuroblastoma cells. *International Journal of Developmental Neuroscience*, *27*(2), 135–147.

Guevara, M., Baccaro, M. E., Gómez-Ansón, B., Frisoni, G., Testa, C., Torre, A., Sotil, E. U. (2011). Cerebral magnetic resonance imaging reveals marked abnormalities of brain tissue density in patients with cirrhosis without overt hepatic encephalopathy. *Journal of Hepatology*, *55*(3), 564–573.

Gupta, A., Mahajan, S., & Sharma, R. (2015). Evaluation of antimicrobial activity of Curcuma longa rhizome extract against Staphylococcus aureus. *Biotechnology Reports*, *6*, 51–55. https://doi.org/10.1016/j.btre.2015.02.001

Gupta, D., Gupta, R. K., Bhaskar, D. J., & Guptad, V. (2015). Comparative Evaluation of Terminalia chebula Extract Mouthwash and Chlorhexidine Mouthwash on Plaque and Gingival Inflammation–4-week Randomised Control Trial. *Oral Health & Preventive Dentistry*, *13*(1).

Gurgel, A. P. A. D., da Silva, J. G., Grangeiro, A. R. S., Oliveira, D. C., Lima, C. M., da Silva, A. C., … Souza, I. A. (2009). In vivo study of the anti-inflammatory and antitumor activities of leaves from Plectranthus amboinicus (Lour.) Spreng (Lamiaceae). *Journal of Ethnopharmacology*, *125*(2), 361–363.

Haaker, J., Gaburro, S., Sah, A., Gartmann, N., Lonsdorf, T. B., Meier, K., Kalisch, R. (2013). Single dose of L-dopa makes extinction memories context-independent and prevents the return of fear. *Proceedings of the National Academy of Sciences*, *110*(26), E2428–E2436.

Haigh, C. L., McGlade, A. R., Lewis, V., Masters, C. L., Lawson, V. A., & Collins, S. J. (2011). Acute exposure to prion infection induces transient oxidative stress progressing to be cumulatively deleterious with chronic propagation in vitro. *Free Radical Biology and Medicine*, *51*(3), 594–608.

Hakiman, M., & Maziah, M. (2009). Non enzymatic and enzymatic antioxidant activities in aqueous extract of different Ficus deltoidea accessions. *J Med Plants Res*, *3*(3), 120–31.

Halliwell, B., & Gutteridge, J. M. (2015). *Free radicals in biology and medicine*. Oxford University Press, USA.

Hamanaka, R. B., & Chandel, N. S. (2010). Mitochondrial reactive oxygen species regulate cellular signaling and dictate biological outcomes. *Trends in Biochemical Sciences*, *35*(9), 505–513.

Haque, M. M., & Alsareii, S. A. (2015). A review of the therapeutic effects of using miswak (Salvadora Persica) on oral health. *Saudi Medical Journal*, *36*(5), 530.

Haris, H. H. B., Ming, Y. K., Perin, F., Blanche, C., & Jinapong, N. (2014). Split-face placebo controlled evaluation of the in vivo anti-ageing efficacy of lineminustm cream (Polygonum minus extract) in healthy asian skin type female subjects. *Asian Journal of Pharmaceutical and Clinical Research*, *7*(4).

Harun, A., James, R. M. J., Lim, S. M., Majeed, A. B. A., Cole, A. L., & Ramasamy, K. (2011). BACE1 inhibitory activity of fungal endophytic extracts from Malaysian medicinal plants. *BMC Complementary and Alternative Medicine*, *11*(1), 1.

Haryono, A. S. (2008). NW. toxic effects of Phaleria (Phaleria macrocarpa) in mice (Mus musculus) swiss webster. *J Biotika*, *5*, 42–8.

Hasham, R., Choi, H.-K., Sarmidi, M. R., & Park, C.-S. (2013). Protective effects of a Ficus deltoidea (Mas cotek) extract against UVB-induced photoageing in skin cells. *Biotechnology and Bioprocess Engineering*, *18*(1), 185–193.

Hauser, D. N., & Hastings, T. G. (2013). Mitochondrial dysfunction and oxidative stress in Parkinson's disease and monogenic parkinsonism. *Neurobiology of Disease*, *51*, 35–42.

He, F., & Zuo, L. (2015). Redox roles of reactive oxygen species in cardiovascular diseases. *International Journal of Molecular Sciences*, *16*(11), 27770–27780.

Hendra, P., Fukushi, Y., & Hashidoko, Y. (2009). Synthesis of benzophenone glucopyranosides from Phaleria macrocarpa and related benzophenone glucopyranosides. *Bioscience, Biotechnology, and Biochemistry*, *73*(10), 2172–2182.

Hendra, R., Ahmad, S., Oskoueian, E., Sukari, A., & Shukor, M. Y. (2011). Antioxidant, anti-inflammatory and cytotoxicity of Phaleria macrocarpa (Boerl.) Scheff fruit. *BMC Complement Altern Med*, *11*(1), 110. https://doi.org/10.1186/1472-6882-11-110

Hendra, R., Ahmad, S., Sukari, A., Shukor, M. Y., & Oskoueian, E. (2011). Flavonoid

analyses and antimicrobial activity of various parts of Phaleria macrocarpa (Scheff.) Boerl fruit. *International Journal of Molecular Sciences*, *12*(6), 3422–3431.

Hernandez-Martinez, J.-M. (2015). *Role of kynurenines and oxidative stress in the differentiation of SH-SY5Y cells*. University of Glasgow.

Hernandez, R. K., Farwell, W., Cantor, M. D., & Lawler, E. V. (2009). Cholinesterase inhibitors and incidence of bradycardia in patients with dementia in the veterans affairs new England healthcare system. *Journal of the American Geriatrics Society*, *57*(11), 1997–2003.

Heun, R., Schoepf, D., Potluri, R., & Natalwala, A. (2013). Alzheimer's disease and co-morbidity: increased prevalence and possible risk factors of excess mortality in a naturalistic 7-year follow-up. *European Psychiatry*, *28*(1), 40–48.

Hill, A. J., Teraoka, H., Heideman, W., & Peterson, R. E. (2005). Zebrafish as a model vertebrate for investigating chemical toxicity. *Toxicological Sciences*, *86*(1), 6–19.

Hilou, A., Nacoulma, O. G., & Guiguemde, T. R. (2006). In vivo antimalarial activities of extracts from Amaranthus spinosus L. and Boerhaavia erecta L. in mice. *Journal of Ethnopharmacology*, *103*(2), 236–240.

Hinton, D. E., Hardman, R. C., Kullman, S. W., Law, J. M. Mac, Schmale, M. C., Walter, R. B., … Yoder, J. A. (2009). Aquatic animal models of human disease: Selected papers and recommendations from the 4th Conference. *Comparative Biochemistry and Physiology. Toxicology & Pharmacology: CBP*, *149*(2), 121.

Holas, O., Musilek, K., Pohanka, M., & Kuca, K. (2012). The progress in the cholinesterase quantification methods. *Expert Opinion on Drug Discovery*, (September), 1–17. https://doi.org/10.1517/17460441.2012.729037

Hölttä-Vuori, M., Salo, V. T. V, Nyberg, L., Brackmann, C., Enejder, A., Panula, P., & Ikonen, E. (2010). Zebrafish: gaining popularity in lipid research. *The Biochemical Journal*, *429*(2), 235–42. https://doi.org/10.1042/BJ20100293

Holtzman, N. G., Kathryn Iovine, M., Liang, J. O., & Morris, J. (2016). Learning to fish with genetics: A primer on the vertebrate model Danio rerio. *Genetics*, *203*(3), 1069–1089. https://doi.org/10.1534/genetics.116.190843

Hong, B. N., Do, M. H., Her, Y. R., Lee, Y. R., & Kang, T. H. (2015). The Effects of Panax ginseng and Panax quinquefolius on Thermoregulation in Animal Models. *Evidence-Based Complementary and Alternative Medicine*, *2015*.

Hopps, E., Noto, D., Caimi, G., & Averna, M. R. (2010). A novel component of the metabolic syndrome: the oxidative stress. *Nutrition, Metabolism and Cardiovascular Diseases*, *20*(1), 72–77.

Hoq, M. Z., Ha, N. C., & Said, S. M. (2009). SMEs in the Malaysian Economy. *International Journal of Marketing Studies*, *Vol.1*(2), 3–17. https://doi.org/10.2139/ssrn.1851426

Hort, J., O'brien, J. T., Gainotti, G., Pirttila, T., Popescu, B. O., Rektorova, I.,

Scheltens, P. (2010). EFNS guidelines for the diagnosis and management of Alzheimer's disease. *European Journal of Neurology*, *17*(10), 1236–1248.

Hossain, M. M. (2011). Therapeutic orchids: traditional uses and recent advances—An overview. *Fitoterapia*, *82*(2), 102–140.

House Thomas, T., & Keeling, M. J. (2011). Epidemic prediction and control in clustered populations. *Journal of Theoretical Biology*, *272*(1), 1–7. https://doi.org/10.1016/j.jtbi.2010.12.009

Howard, R., McShane, R., Lindesay, J., Ritchie, C., Baldwin, A., Barber, R., Holmes, C. (2012). Donepezil and memantine for moderate-to-severe Alzheimer's disease. *New England Journal of Medicine*, *366*(10), 893–903.

Hsiao, I.-L., Hsieh, Y.-K., Wang, C.-F., Chen, I.-C., & Huang, Y.-J. (2015). Trojan-Horse mechanism in the cellular uptake of silver nanoparticles verified by direct intra-and extracellular silver speciation analysis. *Environmental Science & Technology*, *49*(6), 3813–3821.

Huang, H., Taraboletti, A., & Shriver, L. P. (2015). Dimethyl fumarate modulates antioxidant and lipid metabolism in oligodendrocytes. *Redox Biology*, *5*, 169–175.

Huang, W., Metlakunta, A., Dedousis, N., Zhang, P., Sipula, I., Dube, J. J., O'Doherty, R. M. (2010). Depletion of liver Kupffer cells prevents the development of diet-induced hepatic steatosis and insulin resistance. *Diabetes*, *59*(2), 347–357.

Hubert, N., Caruso, D., Pouyaud, L., Avarre, J.-C., Sulandari, S., Hadiaty, R. K., Nafiqoh, N. (2015). DNA Barcoding Indonesian freshwater fishes: challenges and prospects. *DNA Barcodes*, *3*(1), 144–169.

Hurley, L. L., Akinfiresoye, L., Nwulia, E., Kamiya, A., Kulkarni, A. A., & Tizabi, Y. (2013). Antidepressant-like effects of curcumin in WKY rat model of depression is associated with an increase in hippocampal BDNF. *Behavioural Brain Research*, *239*, 27–30.

Isah, T. (2015). Rethinking Ginkgo biloba L.: Medicinal uses and conservation. *Pharmacognosy Reviews*, *9*(18), 140.

Ittner, L. M., & Götz, J. (2011). Amyloid-β and tau—a toxic pas de deux in Alzheimer's disease. *Nature Reviews Neuroscience*, *12*(2), 67–72.

Iwamatsu, T., & Kobayashi, H. (2002). Electron microscopic observations of karyogamy in the fish egg. *Development, Growth & Differentiation*, *44*(5), 357–363.

Jackson, M. J. (2011). Control of reactive oxygen species production in contracting skeletal muscle. *Antioxidants & Redox Signaling*, *15*(9), 2477–2486.

Jackson, M. J., & McArdle, A. (2011). Age-related changes in skeletal muscle reactive oxygen species generation and adaptive responses to reactive oxygen species. *The Journal of Physiology*, *589*(9), 2139–2145.

Jain, P. D., Tambe, R. M., Sancheti, J. S., Nahire, M. S., Bhardwaj, A. K., & Sathaye, S. (2015). Screening of Pistacia integerrima extracts for their anticonvulsant activity in acute zebrafish and rodent models of epilepsy. *International Journal of Nutrition, Pharmacology, Neurological Diseases*, *5*(2), 56.

Jain, V., Momin, M., & Laddha, K. (2012). International Journal Of Ayurvedic And Herbal Medicine 2: 4 (2012) 607: 627.

Jamal, J. A., Sateri, A. A., & Husain, K. (2006). Perbandingan Pelbagai Kaedah Pengekstrakan Air Labisia pumila var. alata. *Jurnal Sains Kesihatan Malaysia*, *4*(1), 37–45.

James, W. D., Berger, T., & Elston, D. (2015). *Andrews' diseases of the skin: clinical dermatology*. Elsevier Health Sciences.

Jamir, N. S., & Takatemjen, L. (2010). Traditional knowledge of Lotha-Naga tribes in Wokha district, Nagaland. *Indian Journal of Traditional Knowledge*, *9*(1), 45–48.

Jeanray, N., Marée, R., Pruvot, B., Stern, O., Geurts, P., Wehenkel, L., & Muller, M. (2015). Phenotype classification of zebrafish embryos by supervised learning. *PloS One*, *10*(1), e0116989.

Ji, L., Fu, F., Zhang, L., Liu, W., Cai, X., Zhang, L., … Gao, F. (2010). Insulin attenuates myocardial ischemia/reperfusion injury via reducing oxidative/nitrative stress. *American Journal of Physiology-Endocrinology and Metabolism*, *298*(4), E871–E880.

Jitoe-Masuda, A., Fujimoto, A., & Masuda, T. (2013). Curcumin: from chemistry to chemistry-based functions. *Current Pharmaceutical Design*, *19*(11), 2084–2092.

Joffry, S. M., Yob, N. J., Rofiee, M. S., Affandi, M. M. R., Suhaili, Z., Othman, F., Zakaria, Z. A. (2011). Melastoma malabathricum (L.) smith ethnomedicinal uses, chemical constituents, and pharmacological properties: a review. *Evidence-Based Complementary and Alternative Medicine*, *2012*.

Johri, A., & Beal, M. F. (2012). Antioxidants in Huntington's disease. *Biochimica et Biophysica Acta (BBA)-Molecular Basis of Disease*, *1822*(5), 664–674.

Jokanović, M., & Kosanović, M. (2010). Neurotoxic effects in patients poisoned with organophosphorus pesticides. *Environmental Toxicology and Pharmacology*. https://doi.org/10.1016/j.etap.2010.01.006

Jomova, K., & Valko, M. (2011). Advances in metal-induced oxidative stress and human disease. *Toxicology*, *283*(2), 65–87.

Jonas, A., Scholz, S., Fetter, E., Sychrova, E., Novakova, K., Ortmann, J., Hilscherova, K. (2015). Endocrine, teratogenic and neurotoxic effects of cyanobacteria detected by cellular in vitro and zebrafish embryos assays. *Chemosphere*, *120*, 321–327. https://doi.org/10.1016/j.chemosphere.2014.07.074

Joseph, B., & Priya, M. (2011a). Review on nutritional, medicinal and pharmacological properties of guava (Psidium guajava Linn.). *International*

Journal of Pharma and Bio Sciences, *2*(1), 53–69.

Joseph, B., & Priya, R. M. (2011b). Bioactive compounds from endophytes and their potential in pharmaceutical effect: a review. *Am. J. Biochem. Mol. Biol*, *1*(3), 291–309.

Joshi, G., Aluise, C. D., Cole, M. P., Sultana, R., Pierce, W. M., Vore, M., Butterfield, D. A. (2010). Alterations in brain antioxidant enzymes and redox proteomic identification of oxidized brain proteins induced by the anti-cancer drug adriamycin: implications for oxidative stress-mediated chemobrain. *Neuroscience*, *166*(3), 796–807.

Juárez-Rojop, I. E., Díaz-Zagoya, J. C., Ble-Castillo, J. L., Miranda-Osorio, P. H., Castell-Rodríguez, A. E., Tovilla-Zárate, C. A., … Bermúdez-Ocaña, D. Y. (2012). Hypoglycemic effect of Carica papaya leaves in streptozotocin-induced diabetic rats. *BMC Complementary and Alternative Medicine*, *12*(1), 1.

Kadir, S. L. A., Yaakob, H., & Zulkifli, R. M. (2013). Potential anti-dengue medicinal plants: a review. *Journal of Natural Medicines*, *67*(4), 677–689.

Kagyung, R., Gajurel, P. R., Rethy, P., & Singh, B. (2010). Ethnomedicinal plants used for gastro-intestinal diseases by Adi tribes of Dehang-Debang Biosphere Reserve in Arunachal Pradesh. *Indian Journal of Traditional Knowledge*, *9*(3), 496–501.

Kalaria, R. N., Maestre, G. E., Arizaga, R., Friedland, R. P., Galasko, D., Hall, K., … Antuono, P. (2008). Alzheimer's disease and vascular dementia in developing countries: prevalence, management, and risk factors. *The Lancet Neurology*. https://doi.org/10.1016/S1474-4422(08)70169-8

Kar, P. K., Lingadurai, S., Nath, L. K., & Nanda, B. (2009). Evaluatio of wou d-heali g activity of leaves of urtica parviflora roxb ad Callicarpa arborea roxb i rats.

Karpicke, J. D., & Grimaldi, P. J. (2012). Retrieval-Based Learning: A Perspective for Enhancing Meaningful Learning. *Educational Psychology Review*. https://doi.org/10.1007/s10648-012-9202-2

Kasote, D. M., Katyare, S. S., Hegde, M. V., & Bae, H. (2015). Significance of antioxidant potential of plants and its relevance to therapeutic applications. *International Journal of Biological Sciences*, *11*(8), 982.

Kastenhuber, E., Kratochwil, C. F., Ryu, S., Schweitzer, J., & Driever, W. (2010). Genetic dissection of dopaminergic and noradrenergic contributions to catecholaminergic tracts in early larval zebrafish. *Journal of Comparative Neurology*, *518*(4), 439–458.

Katzmarzyk, P. T. (2011). The economic costs associated with physical inactivity and obesity in Ontario. *The Health & Fitness Journal of Canada*, *4*(4), 31–40.

Kean, J. D., Kaufman, J., Lomas, J., Goh, A., White, D., Simpson, D., … Zangara, A. (2015). A Randomized Controlled Trial Investigating the Effects of a Special Extract of Bacopa monnieri (CDRI 08) on Hyperactivity and Inattention in Male Children and Adolescents: BACHI Study Protocol

(ANZCTRN12612000827831). *Nutrients*, *7*(12), 9931–9945.

Keijzer, C., Van der Zee, R., Van Eden, W., & Broere, F. (2013). Treg inducing adjuvants for therapeutic vaccination against chronic inflammatory diseases. *Frontiers in Immunology*. https://doi.org/10.3389/fimmu.2013.00245

Kennedy, D. O., & Wightman, E. L. (2011). Herbal extracts and phytochemicals: plant secondary metabolites and the enhancement of human brain function. *Advances in Nutrition: An International Review Journal*, *2*(1), 32–50.

Khanam, Z., Wen, C. S., & Bhat, I. U. H. (2015). Phytochemical screening and antimicrobial activity of root and stem extracts of wild Eurycoma longifolia Jack (Tongkat Ali). *Journal of King Saud University - Science*, *27*(1), 23–30. https://doi.org/10.1016/j.jksus.2014.04.006

Khandouzi, N., Shidfar, F., Rajab, A., Rahideh, T., Hosseini, P., & Taheri, M. M. (2015). The effects of ginger on fasting blood sugar, hemoglobin a1c, apolipoprotein B, apolipoprotein aI and malondialdehyde in type 2 diabetic patients. *Iranian Journal of Pharmaceutical Research: IJPR*, *14*(1), 131.

Khatun, H., Rahman, A., Biswas, M., & Islam, A. U. (2011). Water-soluble fraction of Abelmoschus esculentus L Interacts with glucose and metformin hydrochloride and alters their absorption kinetics after coadministration in rats. *ISRN Pharmaceutics*, *2011*.

Khaw, A. K., Hande, M. P., Kalthur, G., & Hande, M. P. (2013). Curcumin inhibits telomerase and induces telomere shortening and apoptosis in brain tumour cells. *Journal of Cellular Biochemistry*, *114*(6), 1257–1270.

Khoo, L. T., Abdullah, J. O., Abas, F., Tohit, E. R. M., & Hamid, M. (2015). Bioassay-Guided Fractionation of Melastoma malabathricum Linn. Leaf Solid Phase Extraction Fraction and Its Anticoagulant Activity. *Molecules*, *20*(3), 3697–3715.

Khuntia, T. K., & Panda, D. S. (2011). Evaluation of antibacterial, antifungal and anthelmintic activity of Murraya koenigii Spreng. *Pharma Sci Monit*, *2*(2), 105–110.

Kiaei, M. (2013). New Hopes and Challenges for Treatment of Neurodegenerative Disorders: Great Opportunities for Young Neuroscientists. *Basic and Clinical Neuroscience*, *4*(1), 3.

Kim, W.-J., Veriansyah, B., Lee, Y.-W., Kim, J., & Kim, J.-D. (2010). Extraction of mangiferin from Mahkota Dewa (Phaleria macrocarpa) using subcritical water. *Journal of Industrial and Engineering Chemistry*, *16*(3), 425–430.

Kinoshita, M., Murata, K., Naruse, K., & Tanaka, M. (2009). *Medaka: biology, management, and experimental protocols*. John Wiley & Sons.

Kirk, M. D., Pires, S. M., Black, R. E., Caipo, M., Crump, J. A., Devleesschauwer, B., Angulo, F. J. (2015). World Health Organization Estimates of the Global and Regional Disease Burden of 22 Foodborne Bacterial, Protozoal, and Viral Diseases, 2010: A Data Synthesis. *PLoS Medicine*, *12*(12).

https://doi.org/10.1371/journal.pmed.1001921

Kishnani, P. S., Sommer, B. R., Handen, B. L., Seltzer, B., Capone, G. T., Spiridigliozzi, G. A., McRae, T. (2009). The efficacy, safety, and tolerability of donepezil for the treatment of young adults with Down syndrome. *American Journal of Medical Genetics Part A*, *149*(8), 1641–1654.

Knight, E. M., & Gandy, S. (2014). Immunomodulation and AD--down but not out. *Journal of Clinical Immunology*, *34 Suppl 1*, S70-3. https://doi.org/10.1007/s10875-014-0039-y

Koay, S. S. (2008). *Establishment Of Cell Suspension Culture Of Melastoma Malabathricum L. For The Production Of Anthocyanin.* Universiti Sains Malaysia.

Koh, H. L., Wee, H. N., & Tan, C. H. (2016). *Ginseng and Ginseng Products 101: What are You Buying?* World Scientific.

Kolanowska, M., & Konowalik, K. (2014). Niche conservatism and future changes in the potential area coverage of Arundina graminifolia, an invasive orchid species from Southeast Asia. *Biotropica*, *46*(2), 157–165.

Kong, R. Y. C., Giesy, J. P., Wu, R. S. S., Chen, E. X. H., Chiang, M. W. L., Lim, P. L., Au, D. W. T. (2008). Development of a marine fish model for studying in vivo molecular responses in ecotoxicology. *Aquatic Toxicology*, *86*(2), 131–141.

Kongara, S., & Karantza, V. (2012). The interplay between autophagy and ROS in tumorigenesis. *Frontiers in Oncology*, *2*(November), 171. https://doi.org/10.3389/fonc.2012.00171

Konvipasruang, P., Chandrapatya, A., Amrine Jr, J. W., Ochoa, R., Bauchan, G., & Pratt, P. (2012). A new species, Aceria neopaederiae (Acari: Eriophyidae), infesting Paederia foetida L.(Rubiaceae) in Thailand, Hong Kong and Singapore. *Systematic and Applied Acarology*, *17*(2), 191–201.

Kowaltowski, A. J., de Souza-Pinto, N. C., Castilho, R. F., & Vercesi, A. E. (2009). Mitochondria and reactive oxygen species. *Free Radical Biology and Medicine*, *47*(4), 333–343.

Kramer, P. A., & Darley-Usmar, V. M. (2015). The emerging theme of redox bioenergetics in health and disease. *Biomedical Journal*, *38*(4), 294.

Kris-Etherton, P. M., & Keen, C. L. (2002). Evidence that the antioxidant flavonoids in tea and cocoa are beneficial for cardiovascular health. *Current Opinion in Lipidology*, *13*(1), 41–49.

Krishan, G., & Narang, A. (2015). Integrative Therapies in Veterinary Practice. *American Journal of Pharmacology and Pharmacotherapeutics*, *2*(1), 50–55.

Kuiper, J. S., Zuidersma, M., Voshaar, R. C. O., Zuidema, S. U., van den Heuvel, E. R., Stolk, R. P., & Smidt, N. (2015). Social relationships and risk of dementia: a systematic review and meta-analysis of longitudinal cohort studies. *Ageing Research Reviews*, *22*, 39–57.

Kumar, A., Dogra, S., & Prakash, A. (2009). Protective effect of curcumin (Curcuma longa), against aluminium toxicity: Possible behavioral and biochemical alterations in rats. *Behavioural Brain Research*, *205*(2), 384–390.

Kumar, A., & Singh, A. (2015). A review on mitochondrial restorative mechanism of antioxidants in Alzheimer's disease and other neurological conditions. *Frontiers in Pharmacology*, *6*.

Kumar, B. A., Lakshman, K., Nandeesh, R., Kumar, P. A., Manoj, B., Kumar, V., & Shekar, D. S. (2011). In vitro alpha-amylase inhibition and in vivo antioxidant potential of Amaranthus spinosus in alloxan-induced oxidative stress in diabetic rats. *Saudi Journal of Biological Sciences*, *18*(1), 1–5.

Kumar, G. P., Anilakumar, K. R., & Naveen, S. (2015). Phytochemicals Having Neuroprotective Properties from Dietary Sources and Medicinal Herbs. *Pharmacognosy Journal*, *7*(1).

Kumar, G. P., & Khanum, F. (2012). Neuroprotective potential of phytochemicals. *Pharmacognosy Reviews*, *6*(12), 81.

Kume, T., Kawato, Y., Osakada, F., Izumi, Y., Katsuki, H., Nakagawa, T., Akaike, A. (2008). Dibutyryl cyclic AMP induces differentiation of human neuroblastoma SH-SY5Y cells into a noradrenergic phenotype. *Neuroscience Letters*, *443*(3), 199–203.

Kummer, M. P., Hermes, M., Delekarte, A., Hammerschmidt, T., Kumar, S., Terwel, D., Roeber, S. (2011). Nitration of tyrosine 10 critically enhances amyloid β aggregation and plaque formation. *Neuron*, *71*(5), 833–844.

Kunsorn, P., Ruangrungsi, N., Lipipun, V., Khanboon, A., & Rungsihirunrat, K. (2013). The identities and anti-herpes simplex virus activity of Clinacanthus nutans and Clinacanthus siamensis. *Asian Pacific Journal of Tropical Biomedicine*, *3*(4), 284–290.

Kurapati, K. R. V., Samikkannu, T., Kadiyala, D. B., Zainulabedin, S. M., Gandhi, N., Sathaye, S. S., Nair, M. P. (2012). Combinatorial cytotoxic effects of Curcuma longa and Zingiber officinale on the PC-3M prostate cancer cell line. *Journal of Basic and Clinical Physiology and Pharmacology*, *23*(4), 139–146.

Kurnia, D., Akiyama, K., & Hayashi, H. (2008). 29-Norcucurbitacin derivatives isolated from the Indonesian medicinal plant, Phaleria macrocarpa (Scheff.) Boerl. *Bioscience, Biotechnology, and Biochemistry*, *72*(2), 618–620.

Kwon, J. H., Kim, J.-B., Lee, K.-H., Kang, S.-M., Chung, N., Jang, Y., & Chung, J. H. (2007). Protective effect of heat shock protein 27 using protein transduction domain-mediated delivery on ischemia/reperfusion heart injury. *Biochemical and Biophysical Research Communications*, *363*(2), 399–404.

Lakshmi, T., Roy, A., & Geetha, R. V. (2011). Panax ginseng - A universal panacea in the herbal medicine with diverse pharmacological spectrum -A review. *Asian Journal of Pharmaceutical and Clinical Research*.

Lamb, G. D., & Westerblad, H. akan. (2011). Acute effects of reactive oxygen and

nitrogen species on the contractile function of skeletal muscle. *The Journal of Physiology*, *589*(9), 2119–2127.

Lashuel, H. A., Overk, C. R., Oueslati, A., & Masliah, E. (2013). The many faces of α-synuclein: from structure and toxicity to therapeutic target. *Nature Reviews Neuroscience*, *14*(1), 38–48.

Lavado, R., Maryoung, L. A., & Schlenk, D. (2011). Hypersalinity acclimation increases the toxicity of the insecticide phorate in coho salmon (Oncorhynchus kisutch). *Environmental Science & Technology*, *45*(10), 4623–4629.

Lay, M. M., Karsani, S. A., Banisalam, B., Mohajer, S., & Abd Malek, S. N. (2014). Antioxidants, phytochemicals, and cytotoxicity studies on Phaleria macrocarpa (Scheff.) Boerl Seeds. *BioMed Research International*, *2014*. https://doi.org/10.1155/2014/410184

Lay, M. M., Karsani, S. A., Mohajer, S., & Malek, S. N. A. (2014). Phytochemical constituents, nutritional values, phenolics, flavonols, flavonoids, antioxidant and cytotoxicity studies on Phaleria macrocarpa (Scheff.) Boerl fruits. *BMC Complementary and Alternative Medicine*, *14*(1), 1.

Lazzara, C. A., & Kim, Y.-H. (2015). Potential application of lithium in Parkinson's and other neurodegenerative diseases. *Frontiers in Neuroscience*, *9*.

Le Lay, S., Simard, G., Martinez, M. C., & Andriantsitohaina, R. (2014). Oxidative stress and metabolic pathologies: from an adipocentric point of view. *Oxidative Medicine and Cellular Longevity*, *2014*.

Lee, D.-Y., Cha, B.-J., Lee, Y.-S., Kim, G.-S., Noh, H.-J., Kim, S.-Y., Baek, N.-I. (2015). The potential of minor ginsenosides isolated from the leaves of Panax ginseng as inhibitors of melanogenesis. *International Journal of Molecular Sciences*, *16*(1), 1677–1690.

Lee, J.-H., Kim, T., Lee, J.-J., Lee, K. J., Kim, H.-K., Yun, B., … Ma, J. Y. (2015). The Herbal Medicine KBH-1 Inhibits Fat Accumulation in 3T3-L1 Adipocytes and Reduces High Fat Diet-Induced Obesity through Regulation of the AMPK Pathway. *PloS One*, *10*(12), e0142041.

Lee, J.-M., Gillis, T., Mysore, J. S., Ramos, E. M., Myers, R. H., Hayden, M. R., … Margolis, R. L. (2012). Common SNP-based haplotype analysis of the 4p16. 3 Huntington disease gene region. *The American Journal of Human Genetics*, *90*(3), 434–444.

Lee, K. H., Padzil, A. M., Syahida, A., Abdullah, N., Zuhainis, S. W., Maziah, M., Lajis, N. H. (2011). Evaluation of anti-inflammatory, antioxidant and anti-nociceptive activities of six Malaysian medicinal plants. *Journal of Medicinal Plants Research*, *5*(23), 5555–5563. Retrieved from http://www.academicjournals.org/JMPR

Lee, S. Y., Kim, Y. K., Park, N. Il, Kim, C. S., Lee, C. Y., & Park, S. U. (2010). Chemical constituents and biological activities of the berry of Panax ginseng. *Journal of Medicinal Plants Research*, *4*(5), 349–353. https://doi.org/10.1007/s11101-015-9404-6

Leung, T.-M., & Nieto, N. (2013). CYP2E1 and oxidant stress in alcoholic and non-alcoholic fatty liver disease. *Journal of Hepatology*, *58*(2), 395–398.

Levine, D. S., Himle, J. A., Taylor, R. J., Abelson, J. M., Matusko, N., Muroff, J., & Jackson, J. (2013). Panic disorder among African Americans, Caribbean blacks and non-Hispanic whites. *Social Psychiatry and Psychiatric Epidemiology*, *48*(5), 711–723. https://doi.org/10.1007/s00127-012-0582-x

Li, H., Horke, S., & Förstermann, U. (2013). Oxidative stress in vascular disease and its pharmacological prevention. *Trends in Pharmacological Sciences*, *34*(6), 313–319.

Li, M., Zheng, Y., Liang, H., Zou, L., Sun, J., Zhang, Y., Wang, Z. (2013). Molecular cloning and characterization of cat, gpx1 and Cu/Zn-sod genes in pengze crucian carp (Carassius auratus var. Pengze) and antioxidant enzyme modulation induced by hexavalent chromium in juveniles. *Comparative Biochemistry and Physiology Part C: Toxicology & Pharmacology*, *157*(3), 310–321.

Liang, J., Jiang, C., Peng, H., Shi, Q., Guo, X., Yuan, Y., & Huang, L. (2015). Analysis of the age of Panax ginseng based on telomere length and telomerase activity. *Scientific Reports*, *5*, 7985. https://doi.org/10.1038/srep07985

Liang, M., Yang, X., Li, H., Su, S., Yi, H., Chai, L., & Deng, X. (2015). De novo transcriptome assembly of pummelo and molecular marker development. *PloS One*, *10*(3), e0120615.

Lin, W.-C., Tsai, C.-F., Wang, S.-J., Hwang, J.-P., & Fuh, J.-L. (2012). Comparison of the burdens of family caregivers and foreign paid caregivers of the individuals with dementia. *International Psychogeriatrics*, *24*(12), 1953–1961. https://doi.org/10.1017/S1041610212001354

Lindau, S. T., Abramsohn, E. M., & Matthews, A. C. (2015). A manifesto on the preservation of sexual function in women and girls with cancer. *American Journal of Obstetrics and Gynecology*. https://doi.org/10.1016/j.ajog.2015.03.039

Liu, C., Ho, P. C. L., Wong, F. C., Sethi, G., Wang, L. Z., & Goh, B. C. (2015). Garcinol: Current status of its anti-oxidative, anti-inflammatory and anti-cancer effects. *Cancer Letters*. https://doi.org/10.1016/j.canlet.2015.03.019

Liu, C., Li, X., & Lu, B. (2016). The Immp2l mutation causes age-dependent degeneration of cerebellar granule neurons prevented by antioxidant treatment. *Aging Cell*, *15*(1), 167–176.

Liu, F., Xue, Z., Li, N., Huang, H., Ying, Y., Li, J., Li, W. (2014). Effects of lead exposure on the expression of amyloid β and phosphorylated tau proteins in the C57BL/6 mouse hippocampus at different life stages. *Journal of Trace Elements in Medicine and Biology*, *28*(2), 227–232.

Liu, L.-F., Song, J.-X., Lu, J.-H., Huang, Y.-Y., Zeng, Y., Chen, L.-L., Li, M. (2015). Tianma Gouteng Yin, a Traditional Chinese Medicine decoction, exerts neuroprotective effects in animal and cellular models of Parkinson's disease. *Scientific Reports*, *5*.

Liu, M., Choi, D.-Y., Hunter, R. L., Pandya, J. D., Cass, W. A., Sullivan, P. G., Bing, G. (2010). Trichloroethylene induces dopaminergic neurodegeneration in Fisher 344 rats. *Journal of Neurochemistry*, *112*(3), 773–783.

Liu, M., Lv, H., & Ding, Y. (2012). [Antitumoral bibenzyl derivatives from tuber of Arundina graminifolia]. *Zhongguo Zhong Yao Za Zhi*, *37*(1), 66–70. https://doi.org/10.4268/cjcmm20120114

Lob, H. E., Marvar, P. J., Guzik, T. J., Sharma, S., McCann, L. A., Weyand, C., … Harrison, D. G. (2010). Induction of hypertension and peripheral inflammation by reduction of extracellular superoxide dismutase in the central nervous system. *Hypertension*, *55*(2), 277–283.

Loh, K., Deng, H., Fukushima, A., Cai, X., Boivin, B., Galic, S., Ooms, L. M. (2009). Reactive oxygen species enhance insulin sensitivity. *Cell Metabolism*, *10*(4), 260–272.

Lopes, F. M., Schröder, R., da Frota Júnior, M. L. C., Zanotto-Filho, A., Müller, C. B., Pires, A. S., … Kapczinski, F. (2010). Comparison between proliferative and neuron-like SH-SY5Y cells as an in vitro model for Parkinson disease studies. *Brain Research*, *1337*, 85–94.

López-Gutiérrez, N., Romero-González, R., Vidal, J. L. M., & Frenich, A. G. (2016). Quality control evaluation of nutraceutical products from Ginkgo biloba using liquid chromatography coupled to high resolution mass spectrometry. *Journal of Pharmaceutical and Biomedical Analysis*.

Lowes, D. A., Webster, N. R., Murphy, M. P., & Galley, H. F. (2013). Antioxidants that protect mitochondria reduce interleukin-6 and oxidative stress, improve mitochondrial function, and reduce biochemical markers of organ dysfunction in a rat model of acute sepsis. *British Journal of Anaesthesia*, *110*(3), 472–480.

Lu, C. C., Xu, Y. Q., Wu, J. C., Hang, P. Z., Wang, Y., Wang, C., Du, Z. M. (2013). Vitexin protects against cardiac hypertrophy via inhibiting calcineurin and CaMKII signaling pathways. *Naunyn-Schmiedeberg's Archives of Pharmacology*, *386*(8), 747–755. https://doi.org/10.1007/s00210-013-0873-0

Luca, M., Luca, A., & Calandra, C. (2015). The role of oxidative damage in the pathogenesis and progression of alzheimer's disease and vascular dementia. *Oxidative Medicine and Cellular Longevity*, *2015*.

Lv, X., Zhao, S., Ning, Z., Zeng, H., Shu, Y., Tao, O., … Liu, Y. (2015). Citrus fruits as a treasure trove of active natural metabolites that potentially provide benefits for human health. *Chemistry Central Journal*, *9*(1), 1–14.

Ma, L., Young, J., Prabhala, H., Pan, E., Mestdagh, P., Muth, D., … Valastyan, S. (2010). miR-9, a MYC/MYCN-activated microRNA, regulates E-cadherin and cancer metastasis. *Nature Cell Biology*, *12*(3), 247–256.

Ma, S., Liu, X., Xun, Q., & Zhang, X. (2014). Neuroprotective effect of Ginkgolide K against H_2O_2-induced PC12 cell cytotoxicity by ameliorating mitochondrial dysfunction and oxidative stress. *Biological and Pharmaceutical Bulletin*, *37*(2), 217–225.

MacGarvey, N. C., Suliman, H. B., Bartz, R. R., Fu, P., Withers, C. M., Welty-Wolf, K. E., & Piantadosi, C. A. (2012). Activation of mitochondrial biogenesis by heme oxygenase-1–mediated NF-E2–related factor-2 induction rescues mice from lethal Staphylococcus aureus sepsis. *American Journal of Respiratory and Critical Care Medicine*, *185*(8), 851–861.

Madu, C. O., & Lu, Y. (2010). Novel diagnostic biomarkers for prostate cancer. *Journal of Cancer*. https://doi.org/10.1016/j.suronc.2009.02.006

Ervin, M, C., & Mangel, W, A. (2013). Clinical trials in irritable bowel syndrome: a review. *Reviews on Recent Clinical Trials*, *8*(1), 9–22.

Magalingam, K. B., Radhakrishnan, A. K., & Haleagrahara, N. (2015). Protective Mechanisms of Flavonoids in Parkinson's Disease. *Oxidative Medicine and Cellular Longevity*.

Mahabir, S., Chatterjee, D., & Gerlai, R. (2014). Strain dependent neurochemical changes induced by embryonic alcohol exposure in zebrafish. *Neurotoxicology and Teratology*, *41*, 1–7.

Mahmood, K., Zia, K. M., Zuber, M., Salman, M., & Anjum, M. N. (2015). Recent developments in curcumin and curcumin based polymeric materials for biomedical applications: A review. *International Journal of Biological Macromolecules*, *81*, 877–890.

Majd, S., Power, J. H., & Grantham, H. J. (2015). Neuronal response in Alzheimer's and Parkinson's disease: the effect of toxic proteins on intracellular pathways. *BMC Neuroscience*, *16*(1), 69.

Mak, A., & Tay, S. H. (2014). Environmental factors, toxicants and systemic lupus erythematosus. *International Journal of Molecular Sciences*. https://doi.org/10.3390/ijms150916043

Mäkynen, K., Jitsaardkul, S., Tachasamran, P., Sakai, N., Puranachoti, S., Nirojsinlapachai, N., … Adisakwattana, S. (2013). Cultivar variations in antioxidant and antihyperlipidemic properties of pomelo pulp (Citrus grandis [L.] Osbeck) in Thailand. *Food Chemistry*, *139*(1), 735–743.

Malik, V. S., Popkin, B. M., Bray, G. A., Després, J.-P., & Hu, F. B. (2010). Sugar-sweetened beverages, obesity, type 2 diabetes mellitus, and cardiovascular disease risk. *Circulation*, *121*(11), 1356–1364.

Mamat, S. S., Kamarolzaman, M. F. F., Yahya, F., Mahmood, N. D., Shahril, M. S., Jakius, K. F., … Taher, M. (2013). Methanol extract of Melastoma malabathricum leaves exerted antioxidant and liver protective activity in rats. *BMC Complementary and Alternative Medicine*, *13*(1), 1.

Manivannan, Y., Manivannan, B., Beach, T. G., & Halden, R. U. (2015). Role of Environmental Contaminants in the Etiology of Alzheimer's Disease: A Review. *Current Alzheimer Research*, *12*(2), 116.

Manrique, C., Lastra, G., Gardner, M., & Sowers, J. R. (2009). The renin angiotensin aldosterone system in hypertension: roles of insulin resistance and oxidative

stress. *Medical Clinics of North America*, *93*(3), 569–582.

Manzo, L. P., de- Faria, F. M., Dunder, R. J., Rabelo-Socca, E. A., Consonni, S. R., de Almeida, A. C. A., … Luiz-Ferreira, A. (2015). Royal Jelly and Its Dual Role in TNBS Colitis in Mice. *The Scientific World Journal*, *2015*. https://doi.org/10.1155/2015/956235

Marosi, K., Bori, Z., Hart, N., Sarga, L., Koltai, E., Radak, Z., & Nyakas, C. (2012). Long-term exercise treatment reduces oxidative stress in the hippocampus of aging rats. *Neuroscience*, *226*, 21–28.

Martins, J. B., Bastos, M. D. L., Carvalho, F., & Capela, J. P. (2013). Differential effects of methyl-4-phenylpyridinium ion, rotenone, and Paraquat on differentiated SH-SY5Y cells. *Journal of Toxicology*, *2013*. https://doi.org/10.1155/2013/347312

Masella, R., Di Benedetto, R., Varì, R., Filesi, C., & Giovannini, C. (2005). Novel mechanisms of natural antioxidant compounds in biological systems: involvement of glutathione and glutathione-related enzymes. *The Journal of Nutritional Biochemistry*, *16*(10), 577–586.

Masserot, C., Liu, Q., Nguyen, E., Gattolliat, C.-H., Valteau-Couanet, D., Bénard, J., … Ségal-Bendirdjian, E. (2015). WT1 expression is inversely correlated with MYCN amplification or expression and associated with poor survival in non-MYCN-amplified neuroblastoma. *Molecular Oncology*.

Matsuda, M., & Shimomura, I. (2013). Increased oxidative stress in obesity: implications for metabolic syndrome, diabetes, hypertension, dyslipidemia, atherosclerosis, and cancer. *Obesity Research & Clinical Practice*, *7*(5), e330–e341.

Mayeux, R. (2010). Early Alzheimer's disease. *New England Journal of Medicine*, *362*(23), 2194–2201.

McCance, K. L., & Huether, S. E. (2015). *Pathophysiology: The biologic basis for disease in adults and children*. Elsevier Health Sciences.

Md, M. S. (2013). Current Updates on *Centella asiatica*: Phytochemistry, Pharmacology and Traditional Uses. *Medicinal Plant Research*, *3*(4), 20–36. https://doi.org/10.5376/mpr.2013.03.0004

Mehta, A., Prabhakar, M., Kumar, P., Deshmukh, R., & Sharma, P. L. (2013). Excitotoxicity: bridge to various triggers in neurodegenerative disorders. *European Journal of Pharmacology*, *698*(1), 6–18.

Michiels, J., Missotten, J., Dierick, N., Fremaut, D., Maene, P., & De Smet, S. (2008). In vitro degradation and in vivo passage kinetics of carvacrol, thymol, eugenol and trans-cinnamaldehyde along the gastrointestinal tract of piglets. *Journal of the Science of Food and Agriculture*, *88*(13), 2371–2381.

Middleton, L. E., & Yaffe, K. (2009). Promising strategies for the prevention of dementia. *Archives of Neurology*, *66*(10), 1210–1215.

Milkovic, L., Cipak Gasparovic, A., & Zarkovic, N. (2015). Overview on major lipid

peroxidation bioactive factor 4-hydroxynonenal as pluripotent growth-regulating factor. *Free Radical Research*, *49*(7), 850–860.

Min, C., Peng, C., Wei, G., Huang, X., Fu, T., Du, Y., & Wang, C. (2015). Moxibustion with Chinese herbal has good effect on allergic rhinitis. *International Journal of Clinical and Experimental Medicine*, *8*(9), 16480.

Misbah, H., Aziz, A. A., & Aminudin, N. (2013). Antidiabetic and antioxidant properties of Ficus deltoidea fruit extracts and fractions. *BMC Complementary and Alternative Medicine*, *13*(1), 1.

Misiak, B., Cialkowska-Kuzminska, M., Frydecka, D., Chladzinska-Kiejna, S., & Kiejna, A. (2013). European studies on the prevalence of dementia in the elderly: time for a step towards a methodological consensus. *International Journal of Geriatric Psychiatry*, *28*(12), 1211–1221.

Mohamad, S. (2010). The ethnobotany of the Semelai community at Tasek Bera, Pahang, Malaysia: an ethnographic approach for re-settlement.

Mohamad, S., Zin, N. M., Wahab, H. A., Ibrahim, P., Sulaiman, S. F., Zahariluddin, A. S. M., & Noor, S. S. M. (2011). Antituberculosis potential of some ethnobotanically selected Malaysian plants. *Journal of Ethnopharmacology*, *133*(3), 1021–1026. https://doi.org/10.1016/j.jep.2010.11.037

Mohanta, T. K., Tamboli, Y., & Zubaidha, P. K. (2014). Phytochemical and medicinal importance of Ginkgo biloba L. *Natural Product Research*, *28*(10), 746–752. https://doi.org/10.1080/14786419.2013.879303

Mondal, T. (2012). SIgnificance of vam/am mycorrhizal association with medicinal plants: an overview. *Life Sciences Leaflets*, *11*(11), 103–108.

Montani, C., Ramos-Brossier, M., & Sala, C. (2015). Synapse and dendrite deficits induced by mutations in the X-linked intellectual disability gene Il1rapl1. *SpringerPlus*, *4*(Suppl 1), P29.

Montes, P., Ruiz-Sanchez, E., Rojas, C., & Rojas, P. (2015a). Ginkgo biloba Extract 761: A review of basic studies and potential clinical use in psychiatric disorders. *CNS & Neurological Disorders-Drug Targets (Formerly Current Drug Targets-CNS & Neurological Disorders)*, *14*(1), 132–149.

Montes, P., Ruiz-Sanchez, E., Rojas, C., & Rojas, P. (2015b). Ginkgo biloba Extract 761: A Review of Basic Studies and Potential Clinical Use in Psychiatric Disorders. *CNS & Neurological Disorders Drug Targets*, *14*(1), 132–149.

Moreira, P. I., Zhu, X., Wang, X., Lee, H., Nunomura, A., Petersen, R. B., Smith, M. A. (2010). Mitochondria: a therapeutic target in neurodegeneration. *Biochimica et Biophysica Acta (BBA)-Molecular Basis of Disease*, *1802*(1), 212–220.

Moses, T., & Pollier, J. (2013). Bioengineering of plant (tri) terpenoids: from metabolic engineering of plants to synthetic biology in vivo and in vitro. *New Phytologist*, *200*, 27–43. https://doi.org/10.1111/nph.12325

Mosiichuk, N. M., Husak, V. V., Maksymiv, I. V., Hlodan, O. Y., Storey, J. M., Storey, K. B., & Lushchak, V. I. (2015). Toxicity of environmental Gesagard to

goldfish may be connected with induction of low intensity oxidative stress in concentration-and tissue-related manners. *Aquatic Toxicology*, *165*, 249–258.

Mulens-Arias, V., Rojas, J. M., Pérez-Yagüe, S., Morales, M. D. P., & Barber, D. F. (2015). Polyethylenimine-coated SPION exhibits potential intrinsic anti-metastatic properties inhibiting migration and invasion of pancreatic tumor cells. *Journal of Controlled Release*, *216*, 78–92. https://doi.org/10.1016/j.jconrel.2015.08.009

Müller, L., Fröhlich, K., & Böhm, V. (2011). Comparative antioxidant activities of carotenoids measured by ferric reducing antioxidant power (FRAP), ABTS bleaching assay (αTEAC), DPPH assay and peroxyl radical scavenging assay. *Food Chemistry*, *129*(1), 139–148. https://doi.org/10.1016/j.foodchem.2011.04.045

Müller, W. E., Heiser, J., & Leuner, K. (2012). Effects of the standardized Ginkgo biloba extract EGb 761® on neuroplasticity. *International Psychogeriatrics / IPA*, *24 Suppl 1*, S21-4. https://doi.org/10.1017/S1041610212000592

Murphy, K. T., Medved, I., Brown, M. J., Cameron-Smith, D., & McKenna, M. J. (2008). Antioxidant treatment with N-acetylcysteine regulates mammalian skeletal muscle Na+–K+-ATPase α gene expression during repeated contractions. *Experimental Physiology*, *93*(12), 1239–1248.

Murphy, M. P. (2014). Antioxidants as therapies: Can we improve on nature? *Free Radical Biology and Medicine*. https://doi.org/10.1016/j.freeradbiomed.2013.04.010

Murthy, P. S., Ramalakshmi, K., & Srinivas, P. (2009). Fungitoxic activity of Indian borage (Plectranthus amboinicus) volatiles. *Food Chemistry*, *114*(3), 1014–1018.

Myung, S.-K., Ju, W., Cho, B., Oh, S.-W., Park, S. M., Koo, B.-K., & Park, B.-J. (2013). Efficacy of vitamin and antioxidant supplements in prevention of cardiovascular disease: systematic review and meta-analysis of randomised controlled trials. *Bmj*, *346*, f10.

Nakanishi, M., & Nakashima, T. (2014). Features of the Japanese national dementia strategy in comparison with international dementia policies: How should a national dementia policy interact with the public health-and social-care systems? *Alzheimer's & Dementia*, *10*(4), 468–476.

Nakashima, E., & Yamamoto, H. (2015). Continuous flow of nitroso Diels–Alder reaction. *Chemical Communications*, *51*(61), 12309–12312.

Narayanaswamy, N., Duraisamy, A., & Balakrishnan, K. P. (2011). Screening of some medicinal plants for their antityrosinase and antioxidant activities. *Int. J. PharmTech Res*, *3*, 1107–1112.

Nash, K. M., & Shah, Z. A. (2015). Current Perspectives on the Beneficial Role of Ginkgo biloba in Neurological and Cerebrovascular Disorders. *Integrative Medicine Insights*, *10*, 1.

Nelson, A. B., Hammack, N., Yang, C. F., Shah, N. M., Seal, R. P., & Kreitzer, A. C.

(2014). Striatal cholinergic interneurons drive GABA release from dopamine terminals. *Neuron*, *82*(1), 63–70. https://doi.org/10.1016/j.neuron.2014.01.023

Nemetchek, M. D., Stierle, A. A., Stierle, D. B., & Lurie, D. I. (2015). The Ayurvedic plant Bacopa monnieri inhibits inflammatory pathways in the brain. *Journal of Ethnopharmacology*. https://doi.org/10.1016/j.jep.2016.07.073

Newgard, C. B., An, J., Bain, J. R., Muehlbauer, M. J., Stevens, R. D., Lien, L. F., Slentz, C. A. (2009). A branched-chain amino acid-related metabolic signature that differentiates obese and lean humans and contributes to insulin resistance. *Cell Metabolism*, *9*(4), 311–326.

Newman, D. J., & Cragg, G. M. (2012). Natural products as sources of new drugs over the 30 years from 1981 to 2010. *Journal of Natural Products*, *75*(3), 311–335.

Ng, T. B. (2004). Peptides and proteins from fungi. *Peptides*. https://doi.org/10.1016/j.peptides.2004.03.013

Noorafshan, A., & Ashkani-Esfahani, S. (2013). A review of therapeutic effects of curcumin. *Current Pharmaceutical Design*, *19*(11), 2032–2046.

Norshazila, S., Syed Zahir, I., Mustapha Suleiman, K., Aisyah, M. R., & Kamarul Rahim, K. (2010). Antioxidant levels and activities of selected seeds of malaysian tropical fruits. *Malaysian Journal of Nutrition*, *16*(1).

Novak, G., Brashear, H. R., Di, J., Werth, J., Booth, K., Margolin, R., … Liu, E. (2014). Efficacyand safety of monthly subcutaneous bapineuzumab. *Alzheimer's and Dementia*, *10*, P25.

Nutt, C. E. D. M. (2015). People & events.

O'Brien, P. M. S., Bäckström, T., Brown, C., Dennerstein, L., Endicott, J., Epperson, C. N., Ismail, K. M. (2011). Towards a consensus on diagnostic criteria, measurement and trial design of the premenstrual disorders: the ISPMD Montreal consensus. *Archives of Women's Mental Health*, *14*(1), 13–21.

O'Shea, R. S., Dasarathy, S., & McCullough, A. J. (2010). Alcoholic liver disease. *Hepatology*, *51*(1), 307–328.

Ocheng, F., Bwanga, F., Joloba, M., Softrata, A., Azeem, M., Pütsep, K., … Gustafsson, A. (2015). Essential Oils from Ugandan Aromatic Medicinal Plants: Chemical Composition and Growth Inhibitory Effects on Oral Pathogens. *Evidence-Based Complementary and Alternative Medicine*, *2015*.

OECD. (2013). Test No. 236: Fish Embryo Acute Toxicity (FET) Test. *OECD Guidelines for the Testing of Chemicals, Section 2, OECD Publishing*, (July), 1–22. https://doi.org/10.1787/9789264203709-en

Ogden, C. L., Carroll, M. D., Kit, B. K., & Flegal, K. M. (2014). Prevalence of childhood and adult obesity in the United States, 2011-2012. *Jama*, *311*(8), 806–814.

Olaokun, O. O., McGaw, L. J., Eloff, J. N., & Naidoo, V. (2013). Evaluation of the inhibition of carbohydrate hydrolysing enzymes, antioxidant activity and

polyphenolic content of extracts of ten African Ficus species (Moraceae) used traditionally to treat diabetes. *BMC Complementary and Alternative Medicine*, *13*(1), 1.

Olatunde, M. D., & KOMOLAFE, K. (2015). A*ntimalarial and antioxidant effects of methanol and flavonoid-rich extracts of adansonia digitata stem bark on plasmodium berghei-infected mice*. federal UNIVERSITY OYE EKITI.

Omar, M. H., Mullen, W., & Crozier, A. (2011). Identification of proanthocyanidin dimers and trimers, flavone C-Glycosides, and antioxidants in Ficus deltoidea, a Malaysian herbal tea. *Journal of Agricultural and Food Chemistry*, *59*(4), 1363–1369.

Onasanwo, S. A., Singh, N., Olaleye, S. B., Mishra, V., & Palit, G. (2010). Anti-ulcer & antioxidant activities of Hedranthera barteri ${$(Hook F.) Pichon$}$ with possible involvement of H+, K+ ATPase inhibitory activity. *Indian Journal of Medical Research*, *132*(4), 442.

Onodera, T., Kuriyama, I., Andoh, T., Ichikawa, H., Sakamoto, Y., Lee-Hiraiwa, E., & Mizushina, Y. (2015). Influence of particle size on the in vitro and in vivo anti-inflammatory and anti-allergic activities of a curcumin lipid nanoemulsion. *International Journal of Molecular Medicine*, *35*(6), 1720–1728.

Orellana-Paucar, A. M., Serruys, A.-S. K., Afrikanova, T., Maes, J., De Borggraeve, W., Alen, J., de Witte, P. A. (2012). Anticonvulsant activity of bisabolene sesquiterpenoids of Curcuma longa in zebrafish and mouse seizure models. *Epilepsy & Behavior*, *24*(1), 14–22.

Oshima, H., Ishikawa, T., Yoshida, G. J., Naoi, K., Maeda, Y., Naka, K., Oshima, M. (2014). TNF-α/TNFR1 signaling promotes gastric tumorigenesis through induction of Noxo1 and Gna14 in tumor cells. *Oncogene*, *33*(29), 3820–9. https://doi.org/10.1038/onc.2013.356

Oshimi, S., Zaima, K., Matsuno, Y., Hirasawa, Y., Iizuka, T., Studiawan, H.,Morita, H. (2008). Studies on the constituents from the fruits of Phaleria macrocarpa. *Journal of Natural Medicines*, *62*(2), 207–210.

Osto, E., Doytcheva, P., Corteville, C., Bueter, M., Dörig, C., Stivala, S., … Hasballa, R. (2015). Rapid and Body Weight–Independent Improvement of Endothelial and High-Density Lipoprotein Function After Roux-en-Y Gastric Bypass Role of Glucagon-Like Peptide-1. *Circulation*, *131*(10), 871–881.

Ou, M.-C., Liu, Y.-H., Sun, Y.-W., & Chan, C.-F. (2015). The Composition, Antioxidant and Antibacterial Activities of Cold-Pressed and Distilled Essential Oils of Citrus paradisi and Citrus grandis (L.) Osbeck. *Evidence-Based Complementary and Alternative Medicine*, *2015*.

Paithankar, V. V., Raut, K. S., Charde, R. M., & Vyas, J. V. (2015). Phyllanthus niruri: a magic herb. *Research in Pharmacy*, *1*(4).

Pan, H.-Y., Guo, L., & Li, Q. (2010). Changes of serum omentin-1 levels in normal subjects and in patients with impaired glucose regulation and with newly diagnosed and untreated type 2 diabetes. *Diabetes Research and Clinical*

Practice, *88*(1), 29–33.

Pan, S.-Y., Zhou, S.-F., Gao, S.-H., Yu, Z.-L., Zhang, S.-F., Tang, M.-K. Ko, K.-M. (2013). New Perspectives on How to Discover Drugs from Herbal Medicines: CAM's Outstanding Contribution to Modern Therapeutics, New Perspectives on How to Discover Drugs from Herbal Medicines: CAM's Outstanding Contribution to Modern Therapeutics. *Evidence-Based Complementary and Alternative Medicine, Evidence-Based Complementary and Alternative Medicine*, *2013*, *2013*, e627375. https://doi.org/10.1155/2013/627375, 10.1155/2013/627375

Pan, Y.-J., Souissi, S., Souissi, A., Wu, C.-H., Cheng, S.-H., & Hwang, J.-S. (2014). Dietary effects on egg production, egg-hatching rate and female life span of the tropical calanoid copepod Acartia bilobata. *Aquaculture Research*, *45*(10), 1659–1671.

Pandey, K. B., & Rizvi, S. I. (2009). Plant polyphenols as dietary antioxidants in human health and disease. *Oxidative Medicine and Cellular Longevity*, *2*(5), 270–278.

Panza, F., Solfrizzi, V., Imbimbo, B. P., & Logroscino, G. (2014). Amyloid-directed monoclonal antibodies for the treatment of Alzheimer's disease: The point of no return? *Expert Opinion on Biological Therapy*, *14*(10), 1465–1476. https://doi.org/10.1517/14712598.2014.935332

Papi, A., Farabegoli, F., Iori, R., Orlandi, M., De Nicola, G. R., Bagatta, M., Ninfali, P. (2013). Vitexin-2-O-xyloside, raphasatin and (-)-epigallocatechin-3-gallate synergistically affect cell growth and apoptosis of colon cancer cells. *Food Chemistry*, *138*(2–3), 1521–1530. https://doi.org/10.1016/j.foodchem.2012.11.112

Park, H. R., Lee, H., Park, H., Jeon, J. W., Cho, W.-K., & Ma, J. Y. (2015). Neuroprotective effects of Liriope platyphylla extract against hydrogen peroxide-induced cytotoxicity in human neuroblastoma SH-SY5Y cells. *BMC Complementary and Alternative Medicine*, *15*(1), 171.

Parkash, V., & Saikia, A. J. (2015). Production and Multiplication of Native Compost Fungal Activator by Using Different Substrates and Its Influence on Growth and Development of Capsicum chinensis Jacq."Bhut Jolokia." *Biotechnology Research International*, *2015*.

Pattanayak, S., Mandal, T. K., & Bandyopadhyay, S. K. (2015). A Study on Use of Plants to Cure Enteritis and Dysentery in Three Southern Districts of West Bengal, India. *J Medic Plant Studies*, *3*(5), 277–283.

Paur, I., Carlsen, M. H., Halvorsen, B. L., & Blomhoff, R. (2011). Antioxidants in herbs and spices: roles in oxidative stress and redox signaling.

Pergola, P. E., Raskin, P., Toto, R. D., Meyer, C. J., Huff, J. W., Grossman, E. B., Christ-Schmidt, H. (2011). Bardoxolone methyl and kidney function in CKD with type 2 diabetes. *New England Journal of Medicine*, *365*(4), 327–336.

Perluigi, M., Sultana, R., Cenini, G., Di Domenico, F., Memo, M., Pierce, W. M.,

Butterfield, D. A. (2009). Redox proteomics identification of 4-hydroxynonenal-modified brain proteins in Alzheimer's disease: Role of lipid peroxidation in Alzheimer's disease pathogenesis. *Proteomics-Clinical Applications*, *3*(6), 682–693.

Perrone, D., Ardito, F., Giannatempo, G., Dioguardi, M., Troiano, G., Lo Russo, L., Lo Muzio, L. (2015). Biological and therapeutic activities, and anticancer properties of curcumin (Review). *Experimental and Therapeutic Medicine*, *10*(5), 1615–1623.

Petersen, A. C., McKenna, M. J., Medved, I., Murphy, K. T., Brown, M. J., Della Gatta, P., & Cameron-Smith, D. (2012). Infusion with the antioxidant N-acetylcysteine attenuates early adaptive responses to exercise in human skeletal muscle. *Acta Physiologica*, *204*(3), 382–392.

Pham-Huy, L. A., He, H., & Pham-Huy, C. (2008). Free radicals, antioxidants in disease and health. *Int J Biomed Sci*, *4*(2), 89–96.

Pieroni, A., Ibraliu, A., Abbasi, A. M., & Papajani-Toska, V. (2015). An ethnobotanical study among Albanians and Aromanians living in the Rraicë and Mokra areas of Eastern Albania. *Genetic Resources and Crop Evolution*, *62*(4), 477–500.

Pinho, C. M., Teixeira, P. F., & Glaser, E. (2014). Mitochondrial import and degradation of amyloid-β peptide. *Biochimica et Biophysica Acta (BBA)-Bioenergetics*, *1837*(7), 1069–1074.

Pizzorno Jr, J. E., Murray, M. T., & Joiner-Bey, H. (2015). *The clinician's handbook of natural medicine*. Elsevier Health Sciences.

Ponnusamy, S., Ravindran, R., Zinjarde, S., Bhargava, S., & Ravi Kumar, A. (2010). Evaluation of traditional Indian antidiabetic medicinal plants for human pancreatic amylase inhibitory effect in vitro. *Evidence-Based Complementary and Alternative Medicine*, *2011*.

Popescu, B. F. G., & Lucchinetti, C. F. (2012). Pathology of demyelinating diseases. *Annual Review of Pathology: Mechanisms of Disease*, *7*, 185–217.

Powers, S. K., Nelson, W. B., & Hudson, M. B. (2011). Exercise-induced oxidative stress in humans: cause and consequences. *Free Radical Biology and Medicine*, *51*(5), 942–950.

Powers, S. K., Talbert, E. E., & Adhihetty, P. J. (2011). Reactive oxygen and nitrogen species as intracellular signals in skeletal muscle. *The Journal of Physiology*, *589*(9), 2129–2138.

Prince, M., Bryce, R., Albanese, E., Wimo, A., Ribeiro, W., & Ferri, C. P. (2013). The global prevalence of dementia: a systematic review and metaanalysis. *Alzheimer's & Dementia*, *9*(1), 63–75.

Prusiner, S. B. (2013). Biology and genetics of prions causing neurodegeneration. *Annual Review of Genetics*, *47*, 601.

Purohit, S. S., Sharma, A. K., Prajapati, N. D., & Kumar, T. (2009). A handbook of

medicinal plants: a complete source book. *Edition*, *2*, 352–353.

Qamar, S. H., ul Haq, A., Asghar, N., ur Rehman, S., Akhtar, P., & Abbas, G. (2015). Effect of herbal medicine supplementations (Arsilvon Super, Bedgen40 and Hepa-cure Herbal Medicines) on growth performance, immunity and haematological profile in broilers. *Advances in Zoology and Botany*, *3*(2), 17–23.

Qiu, C., von Strauss, E., Bäckman, L., Winblad, B., & Fratiglioni, L. (2013). Twenty-year changes in dementia occurrence suggest decreasing incidence in central Stockholm, Sweden. *Neurology*, *80*(20), 1888–1894.

Quinlan, C. L., Orr, A. L., Perevoshchikova, I. V., Treberg, J. R., Ackrell, B. A., & Brand, M. D. (2012). Mitochondrial complex II can generate reactive oxygen species at high rates in both the forward and reverse reactions. *Journal of Biological Chemistry*, *287*(32), 27255–27264.

Rahmani, A. H., & Aly, S. M. (2014). Active ingredients of ginger as potential candidates in the prevention and treatment of diseases via modulation of biological activities. *International Journal of Physiology, Pathophysiology & Pharmacology*, *6*(2).

Rai, P. K., & Lalramnghinglova, H. (2010). Ethnomedicinal plant resources of Mizoram, India: Implication of traditional knowledge in health care system. *Ethnobotanical Leaflets*, *2010*(3), 6.

Raiola, A., Rigano, M. M., Calafiore, R., Frusciante, L., & Barone, A. (2014). Enhancing the Health-Promoting Effects of Tomato Fruit for Biofortified Food. *Mediators of Inflammation*, *2014*. https://doi.org/10.1155/2014/139873

Raison, C. L., Hale, M. W., Williams, L. E., Wager, T. D., & Lowry, C. A. (2013). Somatic influences on subjective well-being and affective disorders: the convergence of thermosensory and central serotonergic systems. *Frontiers in Psychology*, *5*.

Rajabi, S., Ramazani, A., Hamidi, M., & Naji, T. (2015). Artemia salina as a model organism in toxicity assessment of nanoparticles. *DARU Journal of Pharmaceutical Sciences*, *23*(1), 1.

Rajan, K. E., Preethi, J., & Singh, H. K. (2015). Molecular and functional characterization of Bacopa monniera: a retrospective review. *Evidence-Based Complementary and Alternative Medicine*, *2015*.

Rajenderan, M. T. (2010). Ethno medicinal uses and antimicrobial properties of Melastoma malabathricum. *SEGi Review*, *3*(2), 34–44.

Rajesh, V., & Gayathri, K. (2015). Angiogenesis modulation by Plectranthus amboinicus leaf extract and its fractions on chorioallantoic membrane and tumor induced angiogenesis. *Oriental Pharmacy and Experimental Medicine*, *15*(4), 257–276.

Ramamurthy, S., Kumarappan, C., Dharmalingam, S. R., & Sangeh, J. K. (2014). Phytochemical, Pharmacological and Toxicological Properties of Ficus deltoidea: A Review of a Recent Research. *Annual Research & Review in*

Biology, *4*(14), 2357.

Ramli, A. S., Lakshmanan, S., Haniff, J., Selvarajah, S., Tong, S. F., Bujang, M.-A., … Abdul-Rahman, T. H. (2014). Study protocol of EMPOWER Participatory Action Research (EMPOWER-PAR): a pragmatic cluster randomised controlled trial of multifaceted chronic disease management strategies to improve diabetes and hypertension outcomes in primary care. *BMC Family Practice*, *15*(1), 1.

Rao, B. R., Rajput, D. K., & Mallavarapu, G. R. (2011). Chemical diversity in curry leaf (Murraya koenigii) essential oils. *Food Chemistry*, *126*(3), 989–994.

Rao, R. V., Descamps, O., John, V., & Bredesen, D. E. (2012). Ayurvedic medicinal plants for Alzheimer's disease: a review. *Alzheimers Res Ther*, *4*(3), 22.

Reed, T. T., Pierce Jr, W. M., Turner, D. M., Markesbery, W. R., & Allan Butterfield, D. (2009). Proteomic identification of nitrated brain proteins in early Alzheimer's disease inferior parietal lobule. *Journal of Cellular and Molecular Medicine*, *13*(8b), 2019–2029.

Riahi, Y., Cohen, G., Shamni, O., & Sasson, S. (2010). Signaling and cytotoxic functions of 4-hydroxyalkenals. *American Journal of Physiology-Endocrinology and Metabolism*, *299*(6), E879–E886.

Riber, C., Petersen, C., & Christensen, T. H. (2009). Chemical composition of material fractions in Danish household waste. *Waste Management*, *29*(4), 1251–1257. https://doi.org/10.1016/j.wasman.2008.09.013

Rizzo, L. Y., Golombek, S. K., Mertens, M. E., Pan, Y., Laaf, D., Broda, J., … Lammers, T. (2013). In vivo nanotoxicity testing using the zebrafish embryo assay. *Journal of Materials Chemistry B*, *1*, 3918–3925. https://doi.org/10.1039/c3tb20528b

Rockett, I. R., Regier, M. D., Kapusta, N. D., Coben, J. H., Miller, T. R., Hanzlick, R. L., Kleinig, J. (2012). Leading causes of unintentional and intentional injury mortality: United States, 2000–2009. *American Journal of Public Health*, *102*(11), e84–e92.

Román, G. C., Salloway, S., Black, S. E., Royall, D. R., DeCarli, C., Weiner, M. W. Posner, H. (2010). Randomized, placebo-controlled, clinical trial of donepezil in vascular dementia differential effects by Hippocampal size. *Stroke*, *41*(6), 1213–1221.

Rosa-Falero, C., Torres-Rodríguez, S., Jordán, C., Licier, R., Santiago, Y., Toledo, Z. Ortiz, J. G. (2014). Citrus aurantium increases seizure latency to PTZ induced seizures in zebrafish thru NMDA and mGluR's I and II. *Frontiers in Pharmacology*, *5*.

Rosenberg, G. A. (2009). Matrix metalloproteinases and their multiple roles in neurodegenerative diseases. *The Lancet Neurology*, *8*(2), 205–216.

Rosenberg, G. A. (2012). Neurological diseases in relation to the blood–brain barrier. *Journal of Cerebral Blood Flow & Metabolism*, *32*(7), 1139–1151.

Rosnah, J., Khandaker, M. M., & Boyce, A. N. (2015). Ficus deltoidea: Review on

Background and Recent Pharmacological Potential. *Journal of Agronomy*, *14*(4), 310.

Ryan, T. M., Roberts, B. R., McColl, G., Hare, D. J., Doble, P. A., Li, Q. X., Masters, C. L. (2015). Stabilization of nontoxic Abeta-oligomers: insights into the mechanism of action of hydroxyquinolines in Alzheimer's disease. *J Neurosci*, *35*(7), 2871–2884. https://doi.org/10.1523/JNEUROSCI.2912-14.2015

Ryu, S.-J., Choi, H.-S., Yoon, K.-Y., Lee, O.-H., Kim, K.-J., & Lee, B.-Y. (2015). Oleuropein suppresses LPS-induced inflammatory responses in RAW 264.7 cell and zebrafish. *Journal of Agricultural and Food Chemistry*, *63*(7), 2098–2105.

Sa, G., & Das, T. (2008). Anti cancer effects of curcumin: cycle of life and death. *Cell Division*, *3*(1), 1.

Saborido, A., Naudi, A., Portero-Otín, M., Pamplona, R., & Megias, A. (2011). Stanozolol treatment decreases the mitochondrial ROS generation and oxidative stress induced by acute exercise in rat skeletal muscle. *Journal of Applied Physiology*, *110*(3), 661–669.

Saha, P., Talukdar, A. Das, Ningthoujam, S. S., Choudhury, M. D., Nath, D., Nahar, L., … Basar, N. (2015). Chemical composition, antimicrobial and antioxidant properties of seed oil plants of North-East India: A review.

Sahiner, U. M., & Cansin Sackesen, M. D. (2012). Oxidative stress and antioxidant defense.

Sahlin, K., Shabalina, I. G., Mattsson, C. M., Bakkman, L., Fernström, M., Rozhdestvenskaya, Z., … Tonkonogi, M. (2010). Ultraendurance exercise increases the production of reactive oxygen species in isolated mitochondria from human skeletal muscle. *Journal of Applied Physiology*, *108*(4), 780–787.

Salta, E., & De Strooper, B. (2012). Non-coding RNAs with essential roles in neurodegenerative disorders. *The Lancet Neurology*, *11*(2), 189–200.

Sanda, K. A., Grema, H. A., Geidam, Y. A., & Bukar-Kolo, Y. M. (2011). Pharmacological aspects of Psidium guajava: An update. *International Journal of Pharmacology*, *7*(3), 316–324.

Sapkota, K., Kim, S., Kim, M.-K., & Kim, S.-J. (2010). A detoxified extract of Rhus verniciflua Stokes upregulated the expression of BDNF and GDNF in the rat brain and the human dopaminergic cell line SH-SY5Y. *Bioscience, Biotechnology, and Biochemistry*, *74*(10), 1997–2004.

Sarazin, M., Dorothée, G., De Souza, L. C., & Aucouturier, P. (2013). Immunotherapy in Alzheimer's disease: Do we have all the pieces of the puzzle? *Biological Psychiatry*, *74*(5), 329–332. https://doi.org/10.1016/j.biopsych.2013.04.011

Savelev, S. U., Okello, E. J., & Perry, E. K. (2004). Butyryl-and acetyl-cholinesterase inhibitory activities in essential oils of Salvia species and their constituents. *Phytotherapy Research*, *18*(4), 315–324.

Saxena, R. (2014). Arthritis as a disease of ageing and changes in antioxidant status. *Aging: Oxidative Stress and Dietary Antioxidants. London: Academic Press*

Elsevier Publications, 49–59.

Schartl, M. (2014). Beyond the zebrafish: diverse fish species for modeling human disease. *Disease Models & Mechanisms*, *7*(2), 181–192. https://doi.org/10.1242/dmm.012245

Scheltens, P., Blennow, K., Breteler, M. M. B., de Strooper, B., Frisoni, G. B., Salloway, S., & Van der Flier, W. M. aria. (2016). Alzheimer's disease. *Lancet (London, England)*. https://doi.org/10.1016/S0140-6736(15)01124-1

Schetter, A. J., Heegaard, N. H., & Harris, C. C. (2010). Inflammation and cancer: interweaving microRNA, free radical, cytokine and p53 pathways. *Carcinogenesis*, *31*(1), 37–49.

Schwarz, S., Froelich, L., & Burns, A. (2012). Pharmacological treatment of dementia. *Current Opinion in Psychiatry*, *25*(6), 542–550.

Sekar, M. (2015). Molecules of Interest-Mangiferin-A Review. *Annual Research & Review in Biology*, *5*(4), 307.

Selderslaghs, I. W., Blust, R., & Witters, H. E. (2012). Feasibility study of the zebrafish assay as an alternative method to screen for developmental toxicity and embryotoxicity using a training set of 27 compounds. *Reproductive Toxicology*, *33*(2), 142–154.

Selderslaghs, I. W., Van Rompay, A. R., De Coen, W., & Witters, H. E. (2009). Development of a screening assay to identify teratogenic and embryotoxic chemicals using the zebrafish embryo. *Reproductive Toxicology*, *28*(3), 308–320.

Selvam, C., Jachak, S. M., Thilagavathi, R., & Chakraborti, A. K. (2005). Design, synthesis, biological evaluation and molecular docking of curcumin analogues as antioxidant, cyclooxygenase inhibitory and anti-inflammatory agents. *Bioorganic & Medicinal Chemistry Letters*, *15*(7), 1793–1797.

Sen, S., Chakraborty, R., & De, B. (2011). Challenges and opportunities in the advancement of herbal medicine: India's position and role in a global context. *Journal of Herbal Medicine*, *1*(3), 67–75.

Shahidi, F., & Ambigaipalan, P. (2015). Phenolics and polyphenolics in foods, beverages and spices: Antioxidant activity and health effects - A review. *Journal of Functional Foods*. https://doi.org/10.1016/j.jff.2015.06.018

Sharan, A., Zhu, H., Xie, H., Li, H., Tang, J., Tang, W., … Xia, Y. (2015). Down-regulation of miR-206 is associated with Hirschsprung disease and suppresses cell migration and proliferation in cell models. *Scientific Reports*, *5*.

Sharma, D., Vashist, H., & Sharma, R. B. (2015). European Journal of Biomedical AND Pharmaceutical sciences.

Shehab, N. G., Abu-Gharbieh, E., & Bayoumi, F. A. (2015). Impact of phenolic composition on hepatoprotective and antioxidant effects of four desert medicinal plants. *BMC Complementary and Alternative Medicine*, *15*(1), 1.

SHI, J., & MOY, J. H. (2005). Functional foods from fruit and fruit products. *Asian*

Functional Foods, 303.

SHL Kim, D., Y Kim, J., & Han, Y. (2012). Curcuminoids in neurodegenerative diseases. *Recent Patents on CNS Drug Discovery*, *7*(3), 184–204.

Sindler, A. L., Delp, M. D., Reyes, R., Wu, G., & Muller-Delp, J. M. (2009). Effects of ageing and exercise training on eNOS uncoupling in skeletal muscle resistance arterioles. *The Journal of Physiology*, *587*(15), 3885–3897.

Singh, J., & Kaur, G. (2007). Transcriptional regulation of polysialylated neural cell adhesion molecule expression by NMDA receptor activation in retinoic acid-differentiated SH-SY5Y neuroblastoma cultures. *Brain Research*, *1154*, 8–21.

Sommer, C. A., Sommer, A. G., Longmire, T. A., Christodoulou, C., Thomas, D. D., Gostissa, M., Mostoslavsky, G. (2010). Excision of reprogramming transgenes improves the differentiation potential of iPS cells generated with a single excisable vector. *Stem Cells*, *28*(1), 64–74.

Song, L., Wang, X., Zheng, X., & Huang, D. (2011). Polyphenolic antioxidant profiles of yellow camellia. *Food Chemistry*, *129*(2), 351–357.

Sourabh, A., Rai, A. K., Chauhan, A., Jeyaram, K., Taweechotipatr, M., Panesar, P. S., Walia, S. (2015). Health-related Issues and Indigenous Fermented Products. *Indigenous Fermented Foods of South Asia*, *7*, 309.

Sousa, S. R., Vetter, I., Ragnarsson, L., & Lewis, R. J. (2013). Expression and Pharmacology of Endogenous Cav Channels in SH-SY5Y Human Neuroblastoma Cells. *PLoS ONE*, *8*(3). https://doi.org/10.1371/journal.pone.0059293

Sowndhararajan, K., & Kang, S. C. (2013). Free radical scavenging activity from different extracts of leaves of Bauhinia vahlii Wight & Arn. *Saudi Journal of Biological Sciences*, *20*(4), 319–325.

Srianta, I., Arisasmita, J. H., Patria, H. D., & Epriliati, I. (2012). Ethnobotany, nutritional composition and DPPH radical scavenging of leafy vegetables of wild Paederia foetida and Erechtites hieracifolia. *International Food Research Journal*, *19*(1).

Srinivasan, V., Spence, D. W., Pandi-Perumal, S. R., Brown, G. M., & Cardinali, D. P. (2011). Melatonin in mitochondrial dysfunction and related disorders. *International Journal of Alzheimer's Disease*, *2011*, 326320. https://doi.org/10.4061/2011/326320

Sriram, S., Subramanian, S., Sathiakumar, D., Venkatesh, R., Salerno, M. S., McFarlane, C. D., Sharma, M. (2011). Modulation of reactive oxygen species in skeletal muscle by myostatin is mediated through NF-κB. *Aging Cell*, *10*(6), 931–948.

Stack, E. C., Matson, W. R., & Ferrante, R. J. (2008). Evidence of oxidant damage in Huntington's disease: translational strategies using antioxidants. *Annals of the New York Academy of Sciences*, *1147*(1), 79–92.

Stewart, B., & Wild, C. P. (2015). World cancer report 2014. *World*.

Stooke-Vaughan, G. A., Obholzer, N. D., Baxendale, S., Megason, S. G., & Whitfield, T. T. (2015). Otolith tethering in the zebrafish otic vesicle requires Otogelin and α-Tectorin. *Development*, *142*(6), 1137–1145.

Stopek, J. (2015). *Compositions for intratumoral administration*. Google Patents.

Stueckle, T. A., Shock, B., & Foran, C. M. (2009). Multiple stressor effects of methoprene, permethrin, and salinity on limb regeneration and molting in the mud fiddler crab (Uca pugnax). *Environmental Toxicology and Chemistry*, *28*(11), 2348–2359.

Sukandar, E. Y., Permana, H., Adnyana, I. K., Sigit, J. I., Ilyas, R. A., Hasimun, P., & Mardiyah, D. (2010). Clinical study of turmeric (Curcuma longa L.) and garlic (Allium sativum L.) extracts as antihyperglycemic and antihyperlipidemic agent in type-2 diabetes-dyslipidemia patients. *IJP-International Journal of Pharmacology*, *6*(4), 456–463.

Sulaiman, M. R., Hussain, M. K., Zakaria, Z. A., Somchit, M. N., Moin, S., Mohamad, A. S., & Israf, D. A. (2008). Evaluation of the antinociceptive activity of Ficus deltoidea aqueous extract. *Fitoterapia*, *79*(7), 557–561.

Sun, T., Wang, X., & Xu, H. (2015). Ginkgo Biloba extract for angina pectoris: a systematic review. *Chinese Journal of Integrative Medicine*, *21*(7), 542–550. https://doi.org/10.1007/s11655-015-2070-0

Sun, Y., Shen, Y., Liu, D., & Ye, X. (2015). Effects of drying methods on phytochemical compounds and antioxidant activity of physiologically dropped un-matured citrus fruits. *LWT-Food Science and Technology*, *60*(2), 1269–1275.

Sun, Y., Sheng, Z., Ma, C., Tang, K., Zhu, R., Wu, Z., … Huang, D. (2015). Combining genomic and network characteristics for extended capability in predicting synergistic drugs for cancer. *Nature Communications*, *6*.

Suryowati, T., Damanik, R., Bintang, M., & Handharyani, E. (2015). Antihyperlipidemic Activity of Torbangun Extract (Coleus amboinicus Lour) on Diabetic Rats Induced by Streptozotocin. *IOSR Journal Of Pharmacy*, *5*(5), 22503013.

Syu, G.-D., Chen, H., & Jen, C. J. (2011). Severe exercise and exercise training exert opposite effects on human neutrophil apoptosis via altering the redox status. *PloS One*, *6*(9), e24385.

Talukder, M. H., Johnson, W. M., Varadharaj, S., Lian, J., Kearns, P. N., El-Mahdy, M. A., Zweier, J. L. (2011). Chronic cigarette smoking causes hypertension, increased oxidative stress, impaired NO bioavailability, endothelial dysfunction, and cardiac remodeling in mice. *American Journal of Physiology-Heart and Circulatory Physiology*, *300*(1), H388–H396.

Tan, G. R., Feng, S. S., & Leong, D. T. (2014). The reduction of anti-cancer drug antagonism by the spatial protection of drugs with PLA-TPGS nanoparticles. *Biomaterials*, *35*(9), 3044–3051. https://doi.org/10.1016/j.biomaterials.2013.12.033

Tang, H., Sebastian, B. M., Axhemi, A., Chen, X., Hillian, A. D., Jacobsen, D. W., & Nagy, L. E. (2012). Ethanol-Induced Oxidative Stress via the CYP2E1 Pathway Disrupts Adiponectin Secretion from Adipocytes. *Alcoholism: Clinical and Experimental Research*, *36*(2), 214–222.

Tao, H.-T., Qin, B., Du, F.-L., Xu, T.-C., Liu, L.-N., Lü, F., … Liu, W. (2015). The protective effects of cassava (Manihot esculenta crantz) leaf flavonoid extracts on liver damage of carbon tetrachloride injured mice. *African Journal of Traditional, Complementary and Alternative Medicines*, *12*(1), 52–56.

Tembhurne, S. V., & Sakarkar, D. M. (2010). Influence of Murraya koenigii on experimental model of diabetes and progression of neuropathic pain. *Research in Pharmaceutical Sciences*, *5*(1), 41.

Teppola, H., Sarkanen, J. R., Jalonen, T. O., & Linne, M. L. (2016). Morphological Differentiation Towards Neuronal Phenotype of SH-SY5Y Neuroblastoma Cells by Estradiol, Retinoic Acid and Cholesterol. *Neurochemical Research*, *41*(4), 731–747. https://doi.org/10.1007/s11064-015-1743-6

Thomson, I. S. I. (2015). Kuldeep Dhama, Shyma K. Latheef, Saminathan Mani, Hari Abdul Samad, K. Karthik, Ruchi Tiwari, Rifat Ullah Khan, Mahmoud Alagawany, Mayada R. Farag, Gazi Mahabubul Alam, Vito Laudadio and Vincenzo Tufarelli. *International Journal of Pharmacology*, *11*(3), 152–176.

Thomson, P., Jones, J., Evans, J. M., & Leslie, S. L. (2012). Factors influencing the use of complementary and alternative medicine and whether patients inform their primary care physician. *Complementary Therapies in Medicine*, *20*(1), 45–53.

Tomljenovic, L., & Shaw, C. A. (2011). Do aluminum vaccine adjuvants contribute to the rising prevalence of autism? *Journal of Inorganic Biochemistry*, *105*(11), 1489–1499.

Tradewell, M. L., & Durham, H. D. (2010). Calpastatin reduces toxicity of SOD1G93A in a culture model of amyotrophic lateral sclerosis. *Neuroreport*, *21*(15), 976–979.

Trujillo, J., Chirino, Y. I., Molina-Jijón, E., Andérica-Romero, A. C., Tapia, E., & Pedraza-Chaverrí, J. (2013). Renoprotective effect of the antioxidant curcumin: Recent findings. *Redox Biology*, *1*(1), 448–456.

Tu, Y., Sun, L., Guo, M., & Chen, W. (2013). The medicinal uses of Callicarpa L. in traditional Chinese medicine: An ethnopharmacological, phytochemical and pharmacological review. *Journal of Ethnopharmacology*, *146*(2), 465–481. https://doi.org/10.1016/j.jep.2012.12.051

Türk, G., Sönmez, M., Aydin, M., Yüce, A., Gür, S., Yüksel, M., Aksoy, H. (2008). Effects of pomegranate juice consumption on sperm quality, spermatogenic cell density, antioxidant activity and testosterone level in male rats. *Clinical Nutrition*, *27*(2), 289–296.

Turner, M. R., Bowser, R., Bruijn, L., Dupuis, L., Ludolph, A., McGrath, M., Pullman, S. L. (2013). Mechanisms, models and biomarkers in amyotrophic lateral sclerosis. *Amyotrophic Lateral Sclerosis and Frontotemporal Degeneration*,

14(sup1), 19–32.

Turner, R., Lozoya, O., Wang, Y., Cardinale, V., Gaudio, E., Alpini, G., … Alvaro, D. (2011). Human hepatic stem cell and maturational liver lineage biology. *Hepatology*, *53*(3), 1035–1045.

Ueda, K., Kawabata, R., Irie, T., Nakai, Y., Tohya, Y., & Sakaguchi, T. (2013). Inactivation of Pathogenic Viruses by Plant-Derived Tannins: Strong Effects of Extracts from Persimmon (Diospyros kaki) on a Broad Range of Viruses. *PLoS ONE*, *8*(1). https://doi.org/10.1371/journal.pone.0055343

Upadhyaya, S., Khatiwora, E., & Saikia, L. R. (2010). Mineral elements analysis of selected ethnomedicinally valued plants from Assam, India. *Asian Journal of Chemistry*, *22*(6), 4330.

Uprety, Y., Asselin, H., Dhakal, A., & Julien, N. (2012). Traditional use of medicinal plants in the boreal forest of Canada: review and perspectives. *Journal of Ethnobiology and Ethnomedicine*, *8*(1), 7. https://doi.org/10.1186/1746-4269-8-7

Urrutia, P. J., Mena, N. P., & Núñez, M. T. (2014). The interplay between iron accumulation, mitochondrial dysfunction, and inflammation during the execution step of neurodegenerative disorders. *Frontiers in Pharmacology*, *5*. https://doi.org/10.3389/fphar.2014.00038

Uttara, B., Singh, A. V., Zamboni, P., & Mahajan, R. T. (2009). Oxidative stress and neurodegenerative diseases: a review of upstream and downstream antioxidant therapeutic options. *Current Neuropharmacology*, *7*(1), 65–74.

Vahid, F., Zand, H., Nosrat-Mirshekarlou, E., Najafi, R., & Hekmatdoost, A. (2015). The role dietary of bioactive compounds on the regulation of histone acetylases and deacetylases: A review. *Gene*. https://doi.org/10.1016/j.gene.2015.02.045

Valensin, D., Gabbiani, C., & Messori, L. (2012). Metal compounds as inhibitors of ??-amyloid aggregation. Perspectives for an innovative metallotherapeutics on Alzheimer's disease. *Coordination Chemistry Reviews*. https://doi.org/10.1016/j.ccr.2012.04.010

Valko, M., Leibfritz, D., Moncol, J., Cronin, M. T., Mazur, M., & Telser, J. (2007). Free radicals and antioxidants in normal physiological functions and human disease. *The International Journal of Biochemistry & Cell Biology*, *39*(1), 44–84.

van Beek, T. A., & Montoro, P. (2009). Chemical analysis and quality control of Ginkgo biloba leaves, extracts, and phytopharmaceuticals. *Journal of Chromatography A*, *1216*(11), 2002–2032.

Vasiliou, S. (2009). 12th International Conference on Alzheimer's Disease (ICAD) 2009: Emerging therapeutic strategies, diagnostic techniques and imaging technologies for AD. *Drugs of the Future*.

Vernon, M. M., Dean, D. A., & Dobson, J. (2015). DNA Targeting Sequence Improves Magnetic Nanoparticle-Based Plasmid DNA Transfection Efficiency in Model Neurons. *International Journal of Molecular Sciences*, *16*(8), 19369–19386.

Verotta, L., & Macchi, M. P. (2015). 9 Healing Influences. *Connecting Indian Wisdom and Western Science: Plant Usage for Nutrition and Health*, 147.

Vidal, R. L., Matus, S., Bargsted, L., & Hetz, C. (2014). Targeting autophagy in neurodegenerative diseases. *Trends in Pharmacological Sciences*. https://doi.org/10.1016/j.tips.2014.09.002

Walsh, D. M., & Selkoe, D. J. (2007). Aβ oligomers–a decade of discovery. *Journal of Neurochemistry*, *101*(5), 1172–1184.

Wang, L., Li, H., Chen, S., Nie, C., Cheng, C., & Zhao, C. (2015). Interfacial Self-Assembly of Heparin-Mimetic Multilayer on Membrane Substrate as Effective Antithrombotic, Endothelialization, and Antibacterial Coating. *ACS Biomaterials Science & Engineering*, *1*(11), 1183–1193.

Wang, W.-X. (2011). Incorporating exposure into aquatic toxicological studies: An imperative. *Aquatic Toxicology*, *105*(3), 9–15.

Weber, T., & Köster, R. (2013). Genetic tools for multicolor imaging in zebrafish larvae. *Methods*, *62*(3), 279–291. https://doi.org/10.1016/j.ymeth.2013.07.028

Wei, H., Dobkin, C., Sheikh, A. M., Malik, M., Brown, W. T., & Li, X. (2012). The therapeutic effect of memantine through the stimulation of synapse formation and dendritic spine maturation in autism and fragile X syndrome. *PloS One*, *7*(5), e36981. https://doi.org/10.1371/journal.pone.0036981

Wei, L., Salahura, G., Boncompagni, S., Kasischke, K. A., Protasi, F., Sheu, S.-S., & Dirksen, R. T. (2011). Mitochondrial superoxide flashes: metabolic biomarkers of skeletal muscle activity and disease. *The FASEB Journal*, *25*(9), 3068–3078.

Weinmann, S., Roll, S., Schwarzbach, C., Vauth, C., & Willich, S. N. (2010). Effects of Ginkgo biloba in dementia: systematic review and meta-analysis. *BMC Geriatrics*, *10*(1), 1.

Weinreb, O., Mandel, S., Youdim, M. B. H., & Amit, T. (2013). Targeting dysregulation of brain iron homeostasis in Parkinson's disease by iron chelators. *Free Radical Biology and Medicine*. https://doi.org/10.1016/j.freeradbiomed.2013.01.017

Weissner, W. J., Munaf, A., & Ahamed, S. (2013). Pharmacological Activities of Turmeric (Curcuma longa linn): A Review. *Homeopathy & Ayurvedic Medicine*, *2*, 1–4. https://doi.org/10.4172/2167-1206.1000133

Whittier, A., Sanchez, S., Castañeda, B., Sanchez, E., Gelaye, B., Yanez, D., & Williams, M. a. (2014). Eveningness Chronotype, Daytime Sleepiness, Caffeine Consumption, and Use of Other Stimulants Among Peruvian University Students. *Journal of Caffeine Research*, *4*(1), 21–27. https://doi.org/10.1089/jcr.2013.0029

Wilkinson, D., Schindler, R., Schwam, E., Waldemar, G., Jones, R. W., Gauthier, S., Feldman, H. H. (2009). Effectiveness of donepezil in reducing clinical worsening in patients with mild-to-moderate alzheimer's disease. *Dementia and Geriatric Cognitive Disorders*, *28*(3), 244–251. https://doi.org/10.1159/000241877

Williams, D. R., Gonzalez, H. M., Neighbors, H., Nesse, R., Abelson, J. M., Sweetman, J. Jackson, J. S. (2007). Prevalence and distribution of major depressive disorder in African Americans, Caribbean blacks, and non-Hispanic whites - Results from the National Survey of American Life. *Archives of General Psychiatry*, *64*(3), 305–315. https://doi.org/10.1001/archpsyc.64.3.305

Wong, K., Stewart, A., Gilder, T., Wu, N., Frank, K., Gaikwad, S. Chang, K. (2010). Modeling seizure-related behavioral and endocrine phenotypes in adult zebrafish. *Brain Research*, *1348*, 209–215.

Woo, S., Denis, V., & Yum, S. (2014). Transcriptional changes caused by bisphenol A in Oryzias javanicus, a fish species highly adaptable to environmental salinity. *Marine Drugs*, *12*(2), 983–998.

Xia, Q., Wang, X., Xu, D.-J., Chen, X.-H., & Chen, F.-H. (2012). Inhibition of platelet aggregation by curdione from Curcuma wenyujin essential Oil. *Thrombosis Research*, *130*(3), 409–414.

Xiao, J. (2015). Dietary flavonoid aglycones and their glycosides: which show better biological significance? *Critical Reviews in Food Science and Nutrition*, (just-accepted), 0–0.

Xiao, J., Capanoglu, E., Jassbi, A. R., & Miron, A. (2015). Advance on the Flavonoid C-glycosides and Health Benefits. *Critical Reviews in Food Science and Nutrition*, *8398*(August), 29–45. https://doi.org/10.1080/10408398.2015.1067595

Xu, X., Meiler, S. E., Zhong, T. P., Mohideen, M., Crossley, D. A., Burggren, W. W., & Fishman, M. C. (2002). Cardiomyopathy in zebrafish due to mutation in an alternatively spliced exon of titin. *Nature Genetics*, *30*(2), 205–209.

Xutian, S., Zhang, J., & Louise, W. (2009). New exploration and understanding of traditional Chinese medicine. *The American Journal of Chinese Medicine*, *37*(3), 411–426.

Yamaguchi, K. (2015). Traditional Japanese herbal medicines for treatment of odontopathy. *Frontiers in Pharmacology*, *6*.

Yamamoto, K., Takahara, K., Oyadomari, S., Okada, T., Sato, T., Harada, A., & Mori, K. (2010). Induction of liver steatosis and lipid droplet formation in ATF6α-knockout mice burdened with pharmacological endoplasmic reticulum stress. *Molecular Biology of the Cell*, *21*(17), 2975–2986.

Yana, M. H., Wang, X., & Zhu, X. (2013). Mitochondrial defects and oxidative stress in Alzheimer disease and Parkinson disease. *Free Radical Biology and Medicine*. https://doi.org/10.1016/j.freeradbiomed.2012.11.014

Yang, G., Badeanlou, L., Bielawski, J., Roberts, A. J., Hannun, Y. A., & Samad, F. (2009). Central role of ceramide biosynthesis in body weight regulation, energy metabolism, and the metabolic syndrome. *American Journal of Physiology-Endocrinology and Metabolism*, *297*(1), E211–E224.

Yang, S. H., Liao, P. H., Pan, Y. F., Chen, S. L., Chou, S. S., & Chou, M. Y. (2013).

The novel p53-dependent metastatic and apoptotic pathway induced by vitexin in human oral cancer OC2 cells. *Phytotherapy Research*, *27*(8), 1154–1161. https://doi.org/10.1002/ptr.4841

Yarru, L. P., Settivari, R. S., Gowda, N. K. S., Antoniou, E., Ledoux, D. R., & Rottinghaus, G. E. (2009). Effects of turmeric (Curcuma longa) on the expression of hepatic genes associated with biotransformation, antioxidant, and immune systems in broiler chicks fed aflatoxin. *Poultry Science*, *88*(12), 2620–2627.

Yip, W. P. (2011). Relating estradiol and telomeres to longevity in marine medaka Oryzias melastigma.

Yoo, S. M., & Lee, S. Y. (2015). Optical Biosensors for the Detection of Pathogenic Microorganisms. *Trends in Biotechnology*, *34*(1), 7–25. https://doi.org/10.1016/j.tibtech.2015.09.012

Yorifuji, E., Ishikawa, N., Okada, H., & Tsukaya, H. (2015). Arundina graminifolia var. revoluta (Arethuseae, Orchidaceae) has fern-type rheophyte characteristics in the leaves. *Journal of Plant Research*, *128*(2), 239–247. https://doi.org/10.1007/s10265-014-0689-0

Yosie, A., Effendy, M. A. W., Sifzizul, T. M. T., & Habsah, M. (2011). Antibacterial, radical-scavenging activities and cytotoxicity properties of Phaleria macrocarpa (Scheff.) Boerl. leaves in HEPG2 cell lines. *International Journal of Pharmaceutical Sciences and Research*, *2*(7), 1693.

Youseif, S. H., El-Halwagi, A., Sayed, H. A., & El-Itriby, H. A. (2015). Chemical analyses, antibacterial activity and genetic diversity assessment of some Egyptian Citrus spp. cultivars. *African Journal of Biotechnology*, *13*(26).

Yue, G. G.-L., Kwok, H.-F., Lee, J. K.-M., Jiang, L., Chan, K.-M., Cheng, L., … Bik-San Lau, C. (2015). Novel anti-angiogenic effects of aromatic-turmerone, essential oil isolated from spice turmeric. *Journal of Functional Foods*, *15*, 243–253.

Yuste, J. E., Tarragon, E., Campuzano, C. M., & Ros-Bernal, F. (2015). Implications of glial nitric oxide in neurodegenerative diseases. *Frontiers in Cellular Neuroscience*, *9*.

Zakaria, Z. A., Ghani, Z. D. F. A., Nor, R. N. S. R. M., Gopalan, H. K., Sulaiman, M. R., Jais, A. M. M., … Ripin, J. (2008). Antinociceptive, anti-inflammatory, and antipyretic properties of an aqueous extract of Dicranopteris linearis leaves in experimental animal models. *Journal of Natural Medicines*, *62*(2), 179–187.

Zakaria, Z. A., Hussain, M. K., Mohamad, A. S., Abdullah, F. C., & Sulaiman, M. R. (2011). Anti-inflammatory activity of aqueous extract of Ficus deltoidea. *Biological Research for Nursing*, 1099800410395378.

Zaltieri, M., Longhena, F., Pizzi, M., Missale, C., Spano, P., & Bellucci, A. (2015). Mitochondrial dysfunction and-synuclein synaptic pathology in parkinson's disease: who's on first? *Parkinson's Disease*, *2015*.

Zarkovic, N., Cipak, A., Jaganjac, M., Borovic, S., & Zarkovic, K. (2013).

Pathophysiological relevance of aldehydic protein modifications. *Journal of Proteomics*, *92*, 239–247.

Zeashan, H., Amresh, G., Rao, C. V., & Singh, S. (2009). Antinociceptive activity of Amaranthus spinosus in experimental animals. *Journal of Ethnopharmacology*, *122*(3), 492–496.

Zhang, H., Ma, Q., Zhang, Y., & Xu, H. (2012). Proteolytic processing of Alzheimer's β-amyloid precursor protein. *Journal of Neurochemistry*, *120*, 9–21. https://doi.org/10.1111/j.1471-4159.2011.07519.x

Zhang, M., Duan, C., Zang, Y., Huang, Z., & Liu, G. (2011). The flavonoid composition of flavedo and juice from the pummelo cultivar (Citrus grandis (L.) Osbeck) and the grapefruit cultivar (Citrus paradisi) from China. *Food Chemistry*, *129*(4), 1530–1536.

Zhao, J.-F., Ching, L.-C., Huang, Y.-C., Chen, C.-Y., Chiang, A.-N., Kou, Y. R., Lee, T.-S. (2012). Molecular mechanism of curcumin on the suppression of cholesterol accumulation in macrophage foam cells and atherosclerosis. *Molecular Nutrition & Food Research*, *56*(5), 691–701.

Zhou, C., Huang, Y., & Przedborski, S. (2008). Oxidative stress in Parkinson's disease. *Annals of the New York Academy of Sciences*, *1147*(1), 93–104.

Zimisuhara, B., Valdiani, A., Shaharuddin, N. A., Qamaruzzaman, F., & Maziah, M. (2015). Structure and Principal Components Analyses Reveal an Intervarietal Fusion in Malaysian Mistletoe Fig (Ficus deltoidea Jack) Populations. *International Journal of Molecular Sciences*, *16*(7), 14369–14394.

Zujko, M. E., Witkowska, A. M., Waśkiewicz, A., Piotrowski, W., & Terlikowska, K. M. (2015). Dietary antioxidant capacity of the patients with cardiovascular disease in a cross-sectional study. *Nutrition Journal*, *14*(1), 1.