

"The Effect of Natural Remedy on Osteoarthritis "

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Introduction:

Osteoarthritis (OA) is a chronic disorder characterized by softening and disintegration of the articular cartilage. There is a wide range of treatment available to minimize symptoms such as pain and stiffness as well as preventing further joint damage in OA, such as NSAIDs and Acetaminophen. However, these drugs are known to cause serious side effects such as gastro toxicity and renal toxicity. Therefore, natural remedies such as *Curcuma longa* (turmeric) and *Channa striatus* (haruan) extracts should be seek as alternatives to these drugs as they are known to be safe and may have significant utility in the treatment of OA. The current work was done to see the ultrasound, radiograph and innervation changes after treatment with *Channa striatus* and *Curcuma longa*.

Materials and Methods

Osteoarthritis was induced on the right stifle joint of rabbits by transecting the anterior cruciate ligament. Rabbits were left for 8 weeks to develop OA prior to treatment. Rabbits were fed with *Channa striatus* and *Curcuma longa* extracts for 9 weeks, whereas the control group was left untreated. Radiograph and ultrasound were performed throughout the experiment. Synovial membrane samples were obtained upon euthanasia for immunohistochemistry staining. The innervations of the synovial membrane were studied using antisera against protein gene product 9.5 (PGP 9.5), which is a neuronal marker for sensory and motor nerve fibres. Antisera against CGRP were used to mark the sensory nerve fibres and antisera against NPY were used to mark the motor nerve fibres. Ultrasonography was performed every week post-induction and radiography was performed every 2 weeks post-induction to observe the osteoarthritis progress.

Results and Discussion

There was a mark changes in the synovial membrane after the treatment of extracts. Ultrasound could detect the development of OA as early as the 3rd week after induction of OA. The changes include narrowing of joint space and irregular bone surface in both control and treatment groups. Radiograph could detect changes only after the 7th week such as soft tissue swellings and reduction in joint space. In the treated groups, there was reduction of soft tissue swelling and new bone growth at the femoral condyle. The new bone formation can be also being observed clearly in the control groups. In the normal synovial membrane there was huge number of PGP 9.5- immunoreactive nerve fibres found. CGRP- and NPY-immunoreactive nerve fibres were found throughout the synovial membrane, but were most abundant in the subintimal layer. However, no immunoreactive fibres were detected in the untreated synovial membrane. PGP-, CGRP- and NPY-immunoreactive nerve fibres were found in the extract treated groups but the density of the fibres was lower compared to the normal synovial membrane.

The results showed that *Curcuma longa* and *Channa striatus* could reduce the the periarticular soft tissue swelling as observed in the radiographs and ultrasonographs. This shows that these extracts could reduce inflammation. These extracts could also improve the general pattern of innervation of the synovial membrane that is needed for healing purpose. The result also showed that ultrasound is a better diagnostic tool for early detection of OA compared to radiograph. The increase in nerve fibres in the synovial membrane does indicate that the joint is healing. Therefore, *Channa striatus* extract can be a better possible alternative treatment for OA if compared to *Curcuma longa*, as it could reduce soft tissue swelling and increase the number of nerve fibres in the synovial membrane.

Conclusions

This study showed that *Channa striatus* and *Curcuma longa* extracts were able to reduce inflammations and improved the general innervation of the of the synovial membrane in the experimentally induced OA joints. However, further studies should be done with an additional treatment group of animals with the *Channa striatus* and *Curcuma longa* extracts injected intra-articularly . This can be used as an extra parameters to render the whole experiment to be more conclusive. *Channa striatus* extract can be a better possible alternative treatment for OA compared to *Curcuma longa* , as it could reduce soft tissue swelling and increase the number of nerve fibres in the synovial membrane.

Benefits from the study

The study had proved that *Channa striatus* and *Curcuma longa* which is a natural remedy with no side effect can be used as an alternative to NSAIDs which can cause many side effects. The natural product can be used as OA treatment in both human and animal

Patent(s), if applicable:
Nil

Stage of Commercialization, if applicable:
Nil

Project Publications in Refereed Journals

1. **Shanthi G.** and Aruna T. (2000). Changes in Neurogenic Components in Osteoarthritis Joints and Contralateral Joints in the Dog. *J.Vet. Malaysia*. 12 (2): 71-74
2. **Shanthi G.** and Vaillant C. (2001). MHC II+ Antigen presenting cells and arthritis. *Microsome*. 4(1): 15-18

Project Publications in Conference Proceedings

1. **Shanthi G.**, Heng HG., Loqman HMY. , Cyrena T. & Sabrina S. (2001). Proceedings-The effect of *Curcuma longa* on experimentally induced OA in rabbits. Proceedings - 2nd International Congress/13th VAM Congress and CVA-Australasia / Oceania Regional Symposium, 27th-30th August, 2001, Kuala Lumpur: pg 257-258
2. **Shanthi G.** & Edison K. (2001). The effect of Palm oil on OA in Dogs. Proceedings - 2nd International Congress/13th VAM Congress and CVA-Australasia / Oceania Regional Symposium, 27th-30th August, 2001, Kuala Lumpur: pg 192-193
3. Michelle NYT. and **Shanthi G.** (2002). The effect of natural remedy on OA. Abstract: 1st Malaysian Anatomical Sciences Conference, USM Kelantan

Graduate Research

Name of Graduate	Research Topic	Field of Expertise	Degree Awarded	Graduation Year
MICHELLE NG YEEN TAN	Effect of <i>Channa striatus</i> & <i>Curcuma longa</i> in the experimentally induced arthritis in rabbits.	Osteoarthritis	Will be awarded MSc	2003

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