Cytotoxicity and anticancer activity of Donkioporiella mellea on MRC5 (normal human lung) and A549 (human lung carcinoma) cells lines

ABSTRACT

Polypores are mushrooms which are rich in bioactivities and for generations, they have been widely used as herbal remedies. Despite their significant importance in treatments of various health issues, only a few local species have been reported for their pharmacological potentials. The present study was carried out to establish cytotoxicity potentials of Donkioporiella mellea, a local polypore species collected from forested areas in Malaysia at cellular levels on normal human lung (MRC5) and human lung carcinoma (A549) cell lines. Survival and inhibition rates were analyzed by 3-(4, 5)-dimethylthiahiazo (-z-y-l)-2,5-diphenyltetrazoliumbromide (MTT) while monitoring changes on cellular shapes by inverted phase contrast microscopy. Survival rates of MRC5 cells were observed to be significantly higher than A549 after treatments with various concentrations of polypore extracts. MRC5 cells showed excellence in survival performance when treated with hot and cold aqueous extracts. Cold aqueous extract showed higher cytotoxicity activities compared to hot aqueous extract () with inhibitory concentration (IC50) values of 414.29 µg/ml and >1000 µg/ml, respectively. Treatments with tamoxifen as a control exhibited necrotic features in both cell lines. The results suggest that D. mellea possesses pharmacological potentials that can be utilized for human consumption as a new bioresource alternative, thus encouraging research advancement in mycological and nutraceutical studies.