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Screening of antioxidant and anti-acetylcholinesterase activities of plants from Malpighiaceae family

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The use of plants in traditional medicine comes from antiquity, and secondary metabolites such as alkaloids, flavonoids and tannins can be responsible for several therapeutic properties. Antioxidant compounds from plants can scavenge free radicals, playing an important role in the prevention of oxidative stress, responsible for many degenerative diseases, including Alzheimer's disease (AD). The compounds currently used to treat AD are reported to have many adverse effects, so the search for new compounds from natural sources is required. The tropical family of Malpighiaceae comprises 65 genera and about 1,250 species, with 32 genera and 300 species occurring in Brazil. This family is known by its antimicrobial activity, commonly related to triterpenes, alkaloids and phenolic compounds. The present research involves the evaluation of the antioxidant capacity by DPPH· and ABTS·+ assays of plants from Malpighiaceae family (*Byrsonima*, *Banisteriopsis*, and *Stigmaphyllon*). The extracts were prepared with solvents of increasing polarity (hexane, ethyl acetate and methanol). All extracts were subjected to acetylcholinesterase inhibition assay by thin layer chromatography. The methanol extracts were subjected to the antioxidant assays and HPLC-DAD analysis in a C₁₈ column. The methanolic extracts of *Byrsonima* species showed high antioxidant activity (EC₅₀ from 9.4 to 11.5 µg/mL), probably due to the composition of flavonoids and tannins, whereas the other species presented low or moderate activity. The preliminary screening of acetylcholinesterase assay showed that the studied species exhibited a weak activity on the inhibition of this enzyme related to one or a group of compounds eluting in the same retention factor.

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Cytotoxic activity of crude extract from *Sargassum polycystum* and selected Philippine seaweeds against A549 human lung adenocarcinoma cell line

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Cancer is one of the most dreaded diseases worldwide with limited treatment and management strategies often accompanied by serious side effects. Previous studies on marine products particularly seaweeds pose a significant avenue for alternative cancer treatment. This study determined the cytotoxic activity of selected Philippine seaweeds namely *Caulerpa lentillifera* (CLDE), *Eucheuma denticulatum* (EDDE), *Kappaphycus alvarezii* (KADE) and *Sargassum polycystum* (SPDE). Dichloromethane crude seaweed extracts were tested against A549 human lung adenocarcinoma cell line using 3-(4, 5-dimethylethylthiazol-2-yl)-2, 5-diphenyltetrazolium bromide (MTT) assay. Results indicate that SPDE exerts the highest cytotoxic activity against the cancer cell line with IC₅₀ of 6.00±0.19 µg/mL as compared to other seaweeds tested (CLDE=49.39±0.61 µg/mL; EDDE=>50 µg/mL; KADE=45.44±4.51 µg/mL). Phytosterol is the common phytochemical among the seaweed extracts tested using standard phytochemical analysis and Fourier Transform Infrared Spectroscopy (FTIR). SPDE shows potential for the treatment of lung adenocarcinoma and warrants further studies for the isolation of its bioactive compounds.

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