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[BMC Complement Altern Med.](#) 2010 Apr 30;10:15.

Blechnum orientale Linn - a fern with potential as antioxidant, anticancer and antibacterial agent.

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Abstract

BACKGROUND: Blechnum orientale Linn. (Blechnaceae) is used ethnomedicinally for the treatment of various skin diseases, stomach pain, urinary bladder complaints and sterilization of women. The aim of the study was to evaluate antioxidant, anticancer and antibacterial activity of five solvent fractions obtained from the methanol extract of the leaves of Blechnum orientale Linn.

METHODS: Five solvent fractions were obtained from the methanol extract of B. orientale through successive partitioning with petroleum ether, chloroform, ethyl acetate, butanol and water. Total phenolic content was assessed using Folin-Ciocalteu's method. The antioxidant activity was determined by measuring the scavenging activity of DPPH radicals. Cytotoxic activity was tested against four cancer cell lines and a non-malignant cell using MTT assay. Antibacterial activity was assessed using the disc diffusion and broth microdilution assays. Standard phytochemical screening tests for saponins, tannins, terpenoids, flavonoids and alkaloids were also conducted.

RESULTS: The ethyl acetate, butanol and water fractions possessed strong radical scavenging activity (IC50 8.6-13.0 microg/ml) and cytotoxic activity towards human colon cancer cell HT-29 (IC50 27.5-42.8 microg/ml). The three extracts were also effective against all Gram-positive bacteria tested: Bacillus cereus, Micrococcus luteus, methicillin-susceptible Staphylococcus aureus (MSSA), methicillin-resistant Staphylococcus aureus (MRSA) and Staphylococcus epidermidis(minimum inhibitory concentration MIC 15.6-250 mug/ml; minimum bactericidal concentration MBC 15.6-250 microg/ml). Phytochemical analysis revealed the presence of flavonoids, terpenoids and tannins. Ethyl acetate and butanol fractions showed highest total phenolic content (675-804 mg gallic acid equivalent/g).

CONCLUSIONS: The results indicate that this fern is a potential candidate to be used as an antioxidant agent, for colon cancer therapy and for treatment of MRSA infections and other MSSA/Gram-positive bacterial infectious diseases.

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