



Kolokvij Instituta za medicinska istraživanja i medicinu rada

Naslov predavanja:

Bioactivity of Selected South African medicinal plants

Predavačica:

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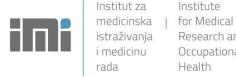
Vrijeme i mjesto: 15. rujna 2022. u 13:00, webinar

Sažetak

Plants are a valuable source of pharmacologically important compounds and current research in drug discovery from medicinal plants involves a multifaceted approach combining botanical, phytochemical, biological, and molecular techniques. Compounds having both anticancer and antimicrobial activity have promising therapeutic potential due to their selective cytotoxicity and their potential to reduce the occurrence of bacterial and fungal infections in immune-compromised cancer patients.

This talk will focus on biological activity of selected South African medicinal plants in particular; The anti-tumour effects of Cotyledon orbiculate, the antigenotoxic effects of Combretum microphyllum and the antibacterial of Centella asiatica, Warburgia salutaris and Curtisia dentata. Using an array of bioassays to assay the leaf extracts of the selected plants for bioactivity; in the antitumour study, we found that *C. orbiculata* dose dependently decreased viability of colon (HCT116), esophageal (OE33 and KYSE70) and cervical (CASKI and C33A) cancer cell lines and also modulated splicing of hnRNPA2B1 and BCL2L1 resulting in a decrease in hnRNPB1 splice variant and an increase in BCL-xs splice variant in all 5 cell lines. Additionally, the extract resulted in an increase in caspase-3-cleavage, an indication of apoptosis induction, In the antigenotoxicity studies, we found that the compounds present in the leaf extracts of C. microphyllum protected against 4-NQO and MMC induced mutations as evident in the Ames test, Ames test (Salmonella typhimurium TA98, TA100 and TA102), cytokinesis-block micronucleus cytome assay, comet assay and VitoTox assay using human hepatocytes C3A cells. The antimutagenic activity of arjunolic acid isolated from C. microphyllum may, at least in part, be attributed to its antioxidant activity resulting in the detoxification of reactive oxygen species produced during

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mutagenesis. Finally in the antimicrobial activity studies on *C. asiatica*, *W. salutaris* and C. dentata; our studies revealed that the plant extracts had activity against 14 nosocomial bacterial pathogens in the microdilution assay, agar diffusion assay and lactate dehydrogenase (LDH) release assay.

These findings clearly demonstrate the potential use of medicinal plants in the treatment of cancers, their potential to inhibit the pathological process resulting from exposure to mutagens; and can be used for the treatment of microbial infections. Given their antioxidant activities, plants can also serve as immune booster and prevent infection in immunosuppressed patients.

Životopis

Professor Tshepiso J Makhafola is a biochemist with a PhD from the University of Pretoria (2015). He is the Assistant Dean for Research, Innovation and Engagements and the Director of the Centre for Quality of Health and Living in the Faculty of Health and Environmental Sciences at the Central University of Technology; Free State. His research focuses on genotoxicity in particular on the use of natural products for prevention of mycotoxin-induced genotoxicity and carcinogenicity - one of the under-reported health issues facing developing countries. He holds a Y rating from the NRF, and he is the recipient of the NRF-BELSPO award and the NRF-FRF award. He is a member of the Toxicology Association of South Africa (TOXSA) and South African Association of Botanists (SAAB). He is appointed as an extraordinary lecturer at the University of Pretoria's Pan African Cancer Research Institute (PACRI).