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In vitro evaluation of the comprehensive anti-microbial and anti-oxidant properties of *Curtisia dentata* (*Burm. f*) C.A. Sm: Toxicological effect on the human embryonic kidney (HEK293) and human hepato-cellular carcinoma (HepG2) cell lines

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Curtisia dentata is traditionally used in African traditional medicine to treat and manage sexually transmitted infections, diarrhoea, stomach complaints and as a purgative. *C. dentata* leaves were collected from Buffelskloof Private Nature Reserve in Mpumalanga province, South Africa. The ethanol, chloroform, ethyl acetate and acetone extracts were evaluated for antimicrobial activity using micro dilution assay against ATCC strains of *Escherichia coli, Pseudomonas aeruginosa, Mycobacterium smegmatis, Mycoplasma hominis, Candida albicans* and some clinical isolates of *Moraxella catarrhalis, Proteus mirabilis* and *Staphylococcus aureus* isolated from HIV patient. Acetone extract exhibited lowest MIC of 0.01 mg/ml against *Candida albicans* compared to other extracts. Besides lupeol, betulinic acid and ursolic acid, β-sitosterol was isolated for the first time from *C. dentata* leaves and exhibited moderate antimicrobial activity with MIC values ranging from 0.20 to 6.25 mg/ml. Furthermore, the ethanol extract and the four isolated compounds revealed MIC index of less than 4 suggesting that their effect is bactericidal. The ethanol extract revealed the best total activity of 2400 ml/g against *Mycoplasma hominis* compared to other extracts. Lupeol exhibited low selectivity index indicating that the compound had the similar cytotoxicity and antimicrobial activity. The cytotoxicity of the isolated compounds was further investigated against the human embryonic kidney (HEK293) and human hepatocellular carcinoma (HepG2) cell lines using the MTT assay. Ursolic acid exhibited the lowest LD_{50} of 122.4 µg/ml against HEK293 cell line while lupeol exhibited LD_{50} of 278.8 and 289.4µg/ml against HEK293 and HepG2 respectively. The ethyl acetate and acetone extracts were further investigated for antioxidant activity against 2, 2-diphenyl-1-picrylhydrazyl (DPPH). The acetone extract exhibited 53.6% inhibition against DPPH at a concentration of 1 mg/100 ml. The findings of the current work validate the use of the plant species in the treatment of various human infections. The biological activity of the extracts, particularly the ethanol extract, may possibly be attributed to the isolated compounds. There is a need to explore the biological activity of the derivatives of the compounds isolated against other human pathogenic strains.

Biography

Victor Olugbenga Fadipe is a synthetic organic chemist (chief research officer (CSO)) with over twenty five years work expertise in policy making in all area of science & technology development particularly in venture capital management, drug repositioning and academic sectors. He is currently a research fellow in chemistry (organic/natural product chemistry) in the department of chemistry, university of Zululand, South Africa. His research interest is in the bioprosecting for drug lead candidates for infectious diseases from medicinal plants. He is a member of several learned society in chemistry.

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