Roland N Ndip et al., J Infect Dis Ther 2016, 4:4(Suppl)
http://dx.doi.org/10.4172/2332-0877.C1.008

Volatile compounds in the stem bark of *Sclerocarya birrea* (Anacardiaceae) possess antimicrobial activity against drug-resistant strains of *Helicobacter pylori*

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The aim of this study was to isolate and identify phytochemicals with anti-*Helicobacter pylori* activity from the stem bark of *Sclerocarya birrea*. The plant crude extract was fractionated by silica gel column and thin layer chromatography techniques; initially with ethyl acetate (EA) and subsequently with a combination of ethyl acetate/methanol/water (EMW). Further fractionation and identification of the phyto-constituents was achieved by gas chromatography and mass spectrometry (GC/MS) analysis. The antimicrobial activity of the fractions and compounds was evaluated against 5 metronidazole and clarythromycin-resistant strains of *H. pylori* and a reference strain ATCC 43526 using micro-broth dilution technique. Amoxicillin was included in these experiments as a positive control antibiotic. Sixteen of the 18 fractions collected demonstrated anti-*H. pylori* activity with minimum inhibitory concentration (MIC_{50}) values ranging from 310-2500 µg/mL. Two of the fractions; EMW fraction 6 and EA fraction 1 revealed the presence of 5 and 24 compounds respectively representing 40.5% and 86.57% of the total composition. Most of the compounds were essential oils with terpinen-4-ol being the most abundant agent (35.83 %), followed by pyrrolidine (32.15 %), aromadendrene (13.63%) and α-gujunene (8.77%). MIC_{50} values for amoxicillin, terpinen-4-ol and pyrrolidine ranged from 0.0003-0.06 µg/mL, 0.004-0.06 µg/mL and 0.005-6.3 µg/mL respectively. The inhibitory activities of terpinen-4-ol and pyrrolidine were similar to amoxicillin ($P>0.05$). Most of these compounds are being reported in this plant for the first time and may represent new sources of therapeutically useful compounds against *H. pylori*.

Biography

Roland N Ndip has obtained his PhD in 1994 from the Edo State University, Nigeria. He has worked as a Professional Microbiologist for over 20 years successively at Edo State University, Nigeria; University of Fort Hare, South Africa and the University of Buea, Cameroon rising to the rank of Professor of Microbiology. His research has concentrated in the areas of microbiology, molecular biology, antimicrobial chemotherapy and alternative and complementary medicine. He has published over 100 articles in international peer reviewed journals of repute. He currently serves as a Registrar at the University of Buea, Cameroon.

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