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Identification and Antimicrobial Activity of Combined Extract from *Azadirachta indica* and *Ocimum sanctum*

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Abstract

The chemical constituents of decoction (individual) and concoction (mixed) of ethanolic leaf extracts from *Azadirachta indica* (neem) and *Ocimum sanctum* (tulsi) were analyzed by gas chromatography-mass spectrophotometery (GC-MS). Decoctions of *A. indica* and *O. sanctum* had 24 and 33 constituents, respectively. Mixed together, 26 compounds were identified. Four major (high percentage) compounds were identified in *A. indica*: n-hexadecanoic acid (14.34%), phytol (19.96%), 9,12,15-octadecatrienoic acid, (Z,Z,Z)- (18.57%), and vitamin E (11.37%). Three major compounds were identified in *O. sanctum*: phenol,2-methoxy-3-(2-propenyl) (15.32%), 9,12,15-octadecatrienoic acid,(Z,Z,Z)- (16.94%), and 9,12,15-octadecatrienoic acid, methyl ester,(Z,Z,Z)- (22.05%). Three major compounds were identified in the mixed extract: n-hexadecanoic acid (16.58%), phenol,2-methoxy-3-(2-propenyl) (20.62%), and 9,12,15-octadecatrienoic acid,(Z,Z,Z) (25.98%). Four of the compounds in the mixed extract were new: eudesma-4(14),11-diene (0.18%), 6-azabicyclo[3.2.1]octane (0.51%), cyclohexane,1-ethyl-1-methyl-2,4-bis(1-methylenyl)-,[1S-(1α,2β,4β)]-β-Elemen (0.77%), and globulol (1.45%). The mixed extract had a high level of antimicrobial activity against fish pathogens as indicated by zone of inhibition, minimum inhibitory concentration, and minimum bactericidal concentration.

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