Bioseparation and activity of Khaya senegalensis fractions against infective larvae of Haemonchus contortus.

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Source

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Abstract

The anthelmintic constituents of Khaya senegalensis (Deser.) A. Juss (Meliaceae) bark extract, previously demonstrated to show both in vitro and in vivo activity against gastrointestinal nematodes of sheep was investigated by chromatographic separation of the crude extract and bioassay of fractions. Bioseparation of the crude ethanol (95%) extract was carried out by gradient vacuum liquid chromatographic analysis and thin layer chromatography fingerprinting of eluates. The activity of the fractions was tested by a larval development assay in vitro. The survival rate of infective larvae L3 of sheep nematodes, predominantly Haemonchus contortus, was used to assess relative bioactivity. A secondary fraction obtained from further purification by preparative thin layer chromatography of a primary active fraction was also assessed for bioactivity. The compositions of the fractions were determined by qualitative chemical tests. The extracts killed infective larvae of H. contortus in a concentration-dependent manner. Best-fit LC50 values were 80.81, 63.73, 44.03 and 63.90 microg/ml for fractions A, B, C, and D, respectively (95% CI). The fractions are composed of saponins (A), saponins and alkaloids (B), saponins, terpenoids, flavonoids, condensed tannins (C), and saponins and tannins (D). Fraction C shows the highest activity of all the fractions, however, the difference is not statistically significant (p>0.05, Kruskal-Wallis test). The secondary fraction, C1A obtained from fraction C gave best-fit LC50 value of 5.09 microg/ml (95% CI) and was identified to be condensed tannin. The anthelminthic activity of K. senegalensis appears to involve synergism between various secondary metabolites found in the extract rather than a particular group of compounds.