3-Hydroxyisoflavanones from the stem bark of Dalbergia melanoxylon: Isolation, antimycobacterial evaluation and molecular docking studies

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Abstract

Two new 3-hydroxyisoflavanones, (S)-3,4′,5-trihydroxy-2′,7-dimethoxy-3′-prenylisoflavanone (trivial name kenusanone F 7-methyl ether) and (S)-3,5-dihydroxy-2′,7-dimethoxy-2″,2″-dimethylpyrano[5″,6″:3′,4′]isoflavanone (trivial name sophoronol-7-methyl ether) along with two known compounds (dalbergin and formononetin) were isolated from the stem bark of Dalbergia melanoxylon. The structures were elucidated using spectroscopic techniques. Kenusanone F 7-methyl ether showed activity against Mycobacterium tuberculosis, whereas both of the new compounds were inactive against the malaria parasite Plasmodium falciparum at 10 μg/ml. Docking studies showed that the new compounds kenusanone F 7-methyl ether and sophoronol-7-methyl ether have high affinity for the M. tuberculosis drug target INHA.

Graphical abstract

Two new 3-hydroxyisoflavanones, kenusanone F 7-methyl ether and sophoronol 7-methyl ether, along with two known compounds were isolated from the stem bark of Dalbergia melanoxylon. Kenusanone F 7-methyl ether showed activity against Mycobacterium tuberculosis.