

## CHEMISTRY AND BIOACTIVITY OF THE FRUITS OF *AEGLE MARMELLOS*

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*Aegle marmelos* of the family Rutaceae is a tree of moderate size growing in tropical countries. All parts of the plant are used in traditional system of medicine for the treatment of broad range of diseases including asthma, anemia, fractures, wounds, swollen joints, high blood pressure, jaundice, diarrhea, troubles during pregnancy, typhoid, diabetes, bowel disorders, viral infections *etc.* Several classes of compounds have been reported from the various parts of the plant. Fruits of *A. marmelos* are edible. Ripe fruit is taken to keep body and mind cool. In a continuation of our studies towards the search for bioactive compounds from the edible fruits of Sri Lanka we investigated the chemistry and bioactivity of ripe fruits of *A. marmelos*.

Ripe fruits of *Aegle marmelos* were blended and filtered. The filtrate was extracted with EtOAc and the residue was sequentially extracted with EtOAc and MeOH. TLC analysis indicated the presence of a series of same UV active compounds in the EtOAc extracts of both filtrate and the residue. The MeOH extract was found to be with some highly polar compounds. Hence, both EtOAc extracts were combined and screened for antifungal activity (against *Cladosporium cladosporioides*), antioxidant activity (against DPPH), phytotoxicity (against *Lactuca sativa* germination), brine shrimp lethality (against *Artemia salina*),  $\alpha$ -amylase and lipase enzyme inhibitory assays. Preliminary investigation indicated the significant antifungal and antioxidant activity in EtOAc extract. Chromatographic separation of EtOAc extract over silica gel, sephadex LH-20, and PTLC furnished 12 compounds (**1-12**). Structures of these compounds were identified as psoralene (**1**), 8-methoxypsoralene (**2**), marmelide (**3**), xanthotoxol (**4**), 6-(dimethylallyl)umbeliferone (**5**), 6',7'-epoxyaurepten (**6**), *O*-methylhalfordinol (**7**), *O*-isopentenylhalfordinol (**8**), (*E*)-*N*-(2-hydroxy-2-(4-methoxy phenyl)ethyl)cinnamamide (**9**), (*E*)-*N*-(2-(4-(3-methylbut-2-enoyloxy)phenyl)-2-hydroxy ethyl)cinnamamide (**10**), (*E*)-*N*-(2-(4-(3-methylbut-2-enoyloxy)phenyl)-2-methoxyethyl)cinnamamide (**11**) and cinnamic acid (**12**) by detail analysis of <sup>1</sup>H & <sup>13</sup>C NMR and MS spectral data. According to the availability, only the compounds **3**, **4**, **5**, **7**, **8**, **9**, **10** and **12** were subjected to bioassays and found that the compound **4** and **5** are having significant antifungal activity against *C. cladosporioides* and compounds **4**, **5**, **8**, **10** and **12** having significant antioxidant activity (IC<sub>50</sub> < 31.25 ppm). Further the compounds **3**, **4**, **7** and **8** showed phytotoxicity activity (IC<sub>50</sub> < 62.5 ppm).

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