Analysis of Insecticidal Azadirachta indica A. Juss. Fractions

Bina Shaheen Siddiquia,*, Munawwer Rasheedab, Firdous Ilyasa, Tahsin Gulzara, Rajput Mohammad Tariqb, and Syed Naim-ul-Hassan Naqvic

a HEJ Research Institute of Chemistry, International Center for Chemical Sciences, WHO Collaborating Centre, University of Karachi, Karachi-75270, Pakistan. Fax: 92-21-9243190. E-mail: bina@khi.comsats.net.pk
b Department of Zoology, University of Karachi, Karachi-75270, Pakistan
c Department of Pharmacology, Baqai Medical University, Toll Plaza, Karachi, Pakistan

* Author for correspondence and reprint requests

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As a result of chemical investigation on the ethanolic extract of fresh fruit coatings of Azadirachta indica A. Juss. (neem), twenty-seven compounds were identified in non-polar to less polar fractions which showed pesticidal activity determined by WHO method against Anopheles stephensi Liston. These identifications were basically made through GC-EIMS and were further supported by other spectroscopic techniques, including $^{13}$C NMR, UV and FTIR as well as retention indices. Thus sixteen $n$-alkanes, 1–16; three aromatics 2,6-bis-(1,1-dimethylethyl)-4-methyl phenol (17), 2-(phenylmethylene)-octanal (20), 1,2,4-trimethoxy-5-(1Z-propenyl)-benzene (27); three benzopyranoids 3,4-dihydro-4,4,5,8-tetramethylcoumarin (18), 3,4-dihydro-4,4,7,8-tetramethylcoumarin-6-ol (19), 1,3,4,6,7,8-hexahydro-4,6,6,7,8,8-hexamethyl-cyclopenta[g]-2-benzopyran (22); one sesquiterpene methyl-3,7,11-trimethyl-2E,6E,10-dodecatrienoate (21); three esters of fatty acids methyl 14-methyl-pentadecanoate (23), ethyl hexadecanoate (24), ethyl 9Z-octadecenoate (25) and one monoterpene 3,7-dimethyl-1-octen-7-ol (26) were identified. Except 6, 8, 24 and 25 all these compounds were identified for the first time from the pericarp and fifteen of these, 1–3, 7, 9, 10, 17–23, 26, 27, are hitherto unreported previously from any part of the tree. Although this tree is a rich source of various natural products, it is the first report of identification of mono- and sesquiterpenes 26 and 21 and a potent antioxidant, 17.

Key words: Azadirachta indica, Fruit Coats, Anopheles stephensi