The generic identity for *Melia excelsa* Jack

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From the first, botanists have not felt quite satisfied with the taxonomic position of *Melia excelsa* Jack. De Jussieu excluded *Melia excelsa* (without mentioning an author’s name) from *Melia*, referring it to *Hartighsea* (Mém. Mus. Hist. Nat. Paris 19: 220. 1830). Under this genus it became confused with *Dysoxylum excelsum* Bl.; this species was placed in *Hartighsea* by De Jussieu, but was later referred again to *Dysoxylum*. Miquel placed it, with doubt, in *Dysoxylum* (Ann. Mus. Bot. Lugd.-Bat. 4: 21. 1868). Hiern, in Hooker’s Flora of British India, had it still under *Melia*, with its relative *M. azadirachta*, but King expressed his doubts soon after (J. As. Soc. Beng. 64, ii: 20. 1895) and his view was shared by Corner (1939) and by Merrill (1952).

When F. H. Hildebrand, in the course of his identification work in the Rijksherbarium at Leyden, came across this problem, he suggested that *Melia excelsa* might belong to *Azadirachta*; *Melia* and *Azadirachta* are allied and together form in the Meliaceae-Melioideae the tribe of the Melieae.

The genus *Azadirachta* was established by De Jussieu in 1830, with *Melia azadirachta* L. as the only species, which he named *Azadirachta indica* Juss. A second species, *A. integrifoliola*, was described by Merrill in 1909 from the Philippines. Harms, in the second edition of the Pflanzenfamilien, gave a good description of both genera, with many details. A few additional remarks on certain features may be made here.

A character particular to *Azadirachta*, which was known to Endert and other foresters, but, as far as I know, not yet mentioned in literature, are the glands on the petiole base. In *Azadirachta* there are two pairs of glands. They are not always all or fully developed, but if they are, there is one pair of orbicular glands, and, below, another pair of linear glands (fig. a). The glands are rather deeply sunk, and in the herbarium it is sometimes difficult to see them all; they are probably more conspicuous in
living material. It is often discernable that they exude a blackish resinous sap. In *Melia* the glands are mostly lacking and obscure; if they are present, then there is only one pair, orbicular in shape (fig. b).

Another distinguishing character is the appearance of the style. In *Melia* it is twice as thick as in *Azadirachta*, approximately $\frac{1}{4}$ against $\frac{1}{2}$ mm. In both genera the stigma forms a sort of crown. In *Melia* this is as wide as the style and is 4–6-lobed (fig. e). In *Azadirachta* it is about twice as wide as the style and 3-lobed, and the base of the crown is formed by a whitish-coloured ring (fig. c-d).

In *Melia* the innovations are densely covered with stellate hairs; in *Azadirachta* they are glabrous but the youngest parts are covered with a sort of resinous wax-like substance, which later breaks up into small scale-like flakes, persistent for some time, especially towards the base of the petiole.

There might be another difference between the genera, since most *Melia*s are deciduous, whereas the *Azadirachta* species are known to be evergreen, even in the driest regions.

Here follows a summary of the most striking characters to distinguish the genera from one another.

Leaves 2–3 times pinnate. Innovations stellate-hairy. Base of the petiole occasionally with one pair of sunken orbicular
glands. Inflorescence shorter than the leaves. Ovary 4–8-locular, in each locule 2 ovules, serially. Style thick, stigma 4–6-lobed. Drupe with thick bony endocarp, 3–8 locules, and as many seeds ............. Melia

Leaves simply pinnate. Innovations glabrous. Base of the petiole mostly with 1 pair of orbicular glands and 1 pair of elongate glands below these. Inflorescence about as long as the leaves. Ovary 3-locular, in each locule 2 ovules, collaterally. Style slender, stigma on a whitish ring, 3-lobed. Drupe with thin endocarp, 1 locule and 1 seed .... Azadirachta

*Melia excelsa* Jack, originally described from Penang, Malaya, has been very inadequately known for a long time, until Corner revisited the place and located the big old trees from which, to all probability, Jack had obtained his type material. Verification with Jack’s type specimen, distributed by Wallich under number 1253 b (not B) was done at Kew by Airy Shaw, as Merrill reported (1952). Corner’s excellent description agrees perfectly with the material in the Rijksherbarium under the name *Melia excelsa*, from Borneo, Sumatra, etc., and from the Philippines under the name *Azadirachta integrifoliola*. Merrill, the author of this species, reduced it himself in 1952 to *Melia excelsa*.

From Corner’s description and from our material, the conclusion must be drawn that *Melia excelsa* Jack actually belongs to *Azadirachta*. Since *A. integrifoliola* has been reduced to *A. excelsa*, this is again the second species in this genus.
Key to the Species

Leaflets dentate; base of their basiscopical half very strongly reduced and cuneate. Petiole slender and hardly thickened at the base. Stigma lobes $\pm \frac{1}{4}$ connate. Fruit $\pm 15$ by 7 mm., the pericarp loose .................. 1. A. indica

Leaflets entire; base of their basiscopical half somewhat reduced, acutish to rounded. Petiole vigorous, thickened at the base. Stigma lobes $\pm \frac{1}{2}$ connate. Fruit $\pm 21$ by 18 mm., pericarp attached to the endocarp ............. 2. A. excelsa

Adelbert identified Azadirachta with the older genus Antelaea Gaertn., Fruct. 1: 277, t. 58 f. 2. 1788. This cannot be correct as the fruit of Antelaea is described and depicted by Gaertner with 3 locules and 3 seeds, and there seems no reason whatever to reject the ingenious interpretation by Hallier f., who referred Antelaea to Melia composita Willd. (Rec. Trav. Bot. Néerl. 15: 33. 1918). According to Hiern (in Hook. f., Fl. Br. Ind. 1: 545. 1875) the correct name for M. composita Willd. (1799) is M. dubia Cav. (1789). Gaertner’s fruit could not be found in the Rijksherbbarium carpologic.

AZADIRACHTA


Distribution.—Native in Upper Burma (Brandis, Ind. Trees 139. 1906); cultivated throughout India, NW. to the River Sutlej, Ceylon, Indo-Chinese peninsula (not in Malaya), E. Java (incl. also Madura I.) to Sumbawa.

Uses.—This important tree is held sacred by Hindus; the fine wood is appreciated for the making of idols, for furniture and construction. The sap is drunk as a medicinal beverage. The oil extracted from the fruits is used medicinally, for dyeing, and for
lighting purposes. The gum comes not far behind Gum Arabic in value. Bark and leaves are also applied in medicine.

*Specimens* (only numbered ones, and in the Rijksherbarium).—


*Distribution.*—Sumatra, Malaya, Borneo, Philippines, Aru Islands, New Guinea.

*Uses.*—In Malaya as well as in Borneo the timber is valued for house-building; in Malaya the young shoots are eaten as a vegetable.

*Specimens* (only numbered ones, and in the Rijksherbarium).—
Sumatra: Boschbouwproefstation bb-series, 23552, 23666, and 31664. Borneo: Agama 9227 and BNB 9970; Angian BNB 10489; Arumpod A 1715; Asah Anak Unyong BRUN 3123; Ashton BRUN 889; bb-series 23990, 23991, 24175, 26069, 26631, 26632, 27752, 29263, and 29414; Cenabre FB 29195 (in A; distributed under *Ailanthus philippinensis* Merr., a Simarubaceae); Cuadra A 904; Harvey A 148. Palawan: Elmer 12638. Aru Is: bb 25388. New Guinea: Koster BW 4471; Mangold BW 2198; Schram BW 1787; Versteegh BW 701 and BW 3986.