

***IPOMOEA SINDICA* STAPF, *CONVOLVULUS SCINDICUS*
STOCKS AND *IPOMOEA ERIOCARPA* R. BR.
(CONVOLVULACEAE): A CLARIFICATION.**

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Abstract

Ipomoea sindica Stapf is reinstated as a species distinct from *I. eriocarpa* R. Br. on the basis of chemotaxonomical and micromorphological evidences. Further, it is made clear that *I. sindica* Stapf is not based on *Convolvulus scindicus* Stocks.

Introduction

Ipomoea sindica Stapf is endemic to Pakistan and Rajasthan State of India (Bhandari, 1978) (Fig.1). This species was first described by Stapf (1894) who observed that it is closely related to *I. eriocarpa* R.Br., distinguishable from the latter by its glabrous capsules and velvety seeds. The capsules of *I. eriocarpa*, as the name indicates, are hairy and the seeds are glabrous. Jafri (1966) and Bhandari (1978) accepted *I. sindica* as a distinct species, but Austin & Ghazanfar (1979) in Flora of Pakistan confused *I. sindica* Stapf with *Convolvulus scindicus* Stocks and cited it as the synonym of the latter as *I. sindica* (Stocks) Stapf; and under *I. eriocarpa*, they gave a synonym *I. sindica* sensu Jafri creating taxonomic confusion. Since Flora of Pakistan is a reference work on the plants of Pakistan, we felt the need to clarify this confusion. We have, therefore investigated the nomenclature using chemotaxonomical and micromorphological (seed morphology) evidences.

Materials and Methods

Chemotaxonomy: Dried leaf samples (0.5g) of *Ipomoea sindica* and *I. eriocarpa* were extracted in 80% ethanol for 24h. Voucher specimens of the two species analysed have been deposited in the Karachi University Herbarium (KUH). Flavonoid glycosides were analysed by 2D paper chromatography against authentic markers on cellulose TLC as described previously by Husain & Markham (1981) and Husain *et al.*, (1982).

Seed micromorphology: Seeds of both species were soaked in 0.5% w/v solution of Driselase enzyme at 30°C for 24 h, rinsed in distilled water and left to dry at room temperature as described by Lester & Ezcurra (1991). Untreated seeds were also studied. Seeds were mounted on clean stubs and coated with 150Å^o of gold in a vacuum chamber. SEM examination was carried out by Jeol microscope (JSM-T200) and photographs taken at different magnifications.

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Table 1. Flavonoid glycoside spots found in *Ipomoea* species.

Taxon	Spot No.						
	1	2	3	4	5	6	7
<i>Ipomoea eriocarpa</i>	+	+	+	+	+	+	+
<i>Ipomoea sindica</i>	+	+	+	-	+	-	-

Key: + = present, - = absent

Results and Discussion

Phenolic constituents: The paper chromatographic analysis showed seven spots of flavonoid glycosides in *Ipomoea eriocarpa*, whereas only four spots were present in the case of *I. sindica* (Table 1). Tentative identification of all the spots is given in Table 2. Rutin, an unidentified compound, Myricetin-5-O-Methyl ether, and Quercetin 6-hydroxy derivative were common in both species, whereas Quercetin 7-glycoside, Myricetin glycoside and an unidentified compound were absent in case of *I. sindica*.

Seed micromorphology: The scanning electron microscopic studies have revealed that the seeds of *I. eriocarpa* are completely glabrous and have a distinct, raised reticulate pattern (Fig.2, A & B) which becomes more distinct after enzyme etching treatment (Fig.3, A&B). The seeds of *I. sindica*, on the other hand, are densely tomentose with a

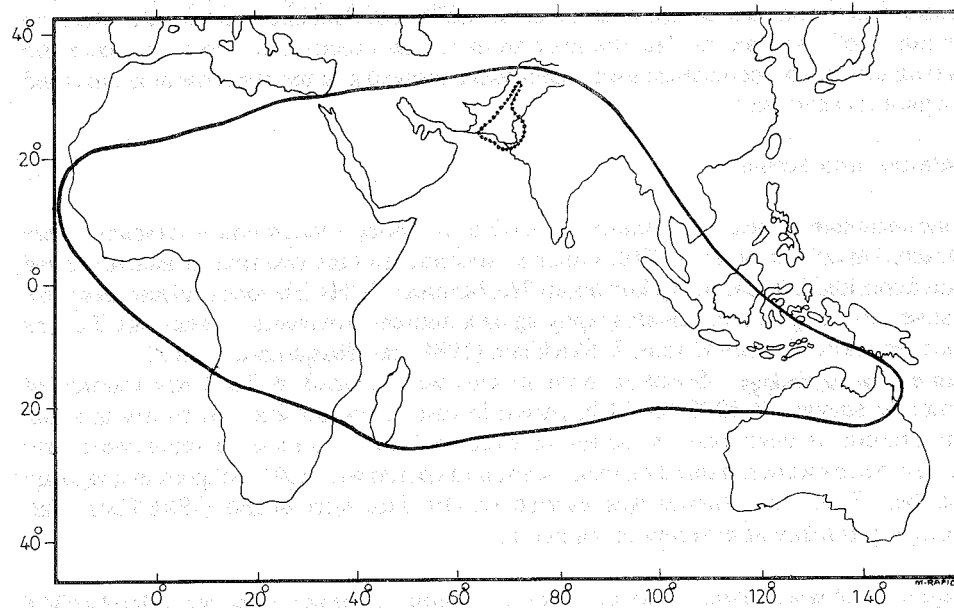


Fig.1. Distribution map of *Ipomoea eriocarpa* (-) and *I. sindica* (---).

Table 2. Tentative identification of flavonoid glycoside spots found in *Ipomoea* species on the basis of colour and Rf values.

Flavonoid Spot No.	Colour in UV	Colour in UV+NH ₃	BAW	Rf value (X100)		Tentative identification
				15% Acetic Acid	PhoH	
1.	Brown	Yellow	45	40	-	Rutin
2.	Green yellow	Green yellow	38	32	-	Unidentified
3.	Bright yellow	Bright yellow	26	40	21	Myricetin-5-0-Methyl ether
4.	Yellow	Yellow	32	10	40	Quercetin 7-gluco-side
5.	Dull black	Dull black	31	50	12	Quercetin 6-hydroxy derivatives
6.	Bright yellow	Bright yellow	43	65	13	Myricetin glycoside
7.	Pale yellow	Pale yellow	35	80	-	Unidentified

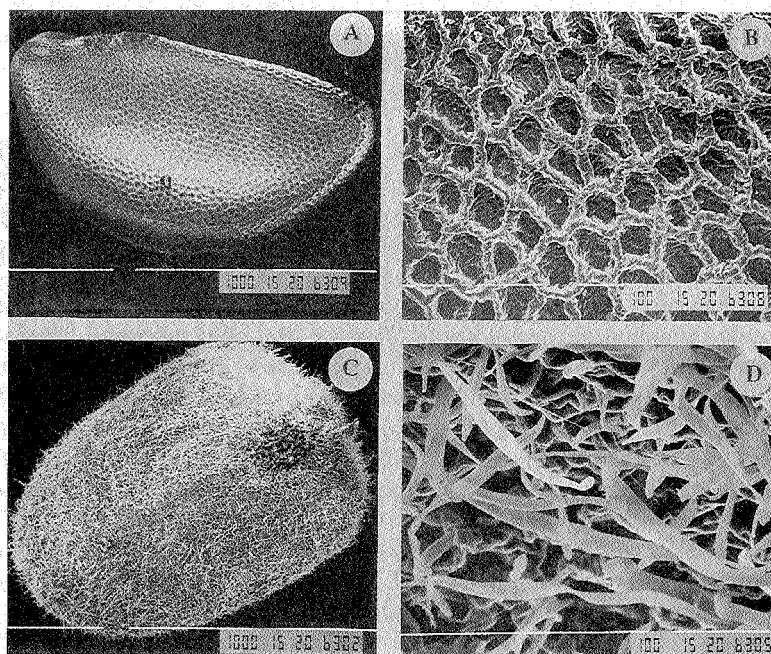


Fig.2. Scanning electron micrographs of seed surface in *Ipomoea* before enzyme etching treatment. A. *I. eriocarpa*: whole seed, B. same at higher magnification (Khan 10607), C. *I. indica*: whole seed, D. same at higher magnification (Jafri, 4122).

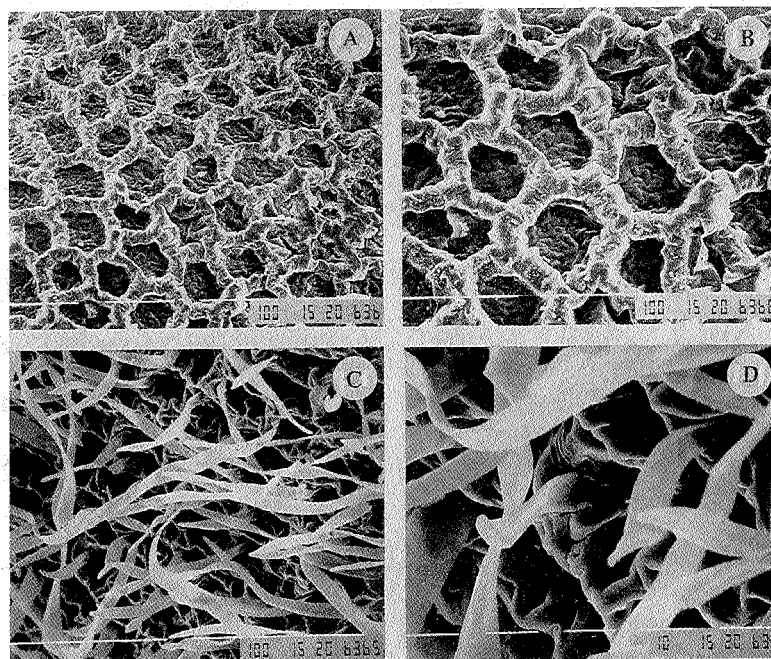


Fig.3. Scanning electron micrographs of seed surface in *Ipomoea* after enzyme etching treatment. A & B. *I. eriocarpa*. (Khan 10607), C. & D. *I. sindica* (Jafri 4122).

roughly rugate surface (Fig.2, C&D; Fig.3, C&D). The hairs are of varying lengths, unicellular with blunt tips, arising from the raised parts of the testa (Fig.3, C&D).

Nomenclature: A critical examination of the original literature has revealed that *Ipomoea sindica* Stapf is not based on *Convolvulus scindicus* Stocks. The original description of *I. sindica* Stapf is a weak annual, prostrate herb, exactly the taxon recognized by Jafri (1966) and Bhandari (1978) as *Ipomoea sindica*, whereas *Convolvulus scindicus* Stocks is a profusely branched perennial shrub. Further, the only specimen cited with the original description of *C. scindicus* Stocks is "Lower hills of Scinde and Beloochistan, Stocks 433". This specimen is nowhere mentioned by Stapf under *I. sindica*. Another point is the spelling of 'Sind' in the specific epithet, which is 'sind' in *I. sindica* and 'scind' in *C. scindicus*. It is therefore clear that *I. sindica* Stapf has nothing to do with *C. scindicus* Stocks and Austin & Ghazanfar (1979) have inadvertently placed the former in the synonymy of the latter and also gave the wrong author citation i.e., *Ipomoea sindica* (Stocks) Stapf, as the taxon of Stapf is not based on the taxon of Stocks. It is also obvious that the taxon recognized by Jafri (1966) as *I. sindica* is indeed the correct taxon of Stapf and it should not be mentioned as *I. sindica* sensu Jafri.

On the basis of present chemotaxonomical and micromorphological studies, *I. sindica* Stapf is reinstated here as a species distinct from *I. eriocarpa* R. Br. which is a widely spread species occurring from tropical Africa to northern Australia, while *I. sindica* is endemic to Pakistan and Rajasthan State of India (Fig.1).

Acknowledgements

We are grateful to Prof. Dr. S.I.Ali for kindly going through the manuscript. Thanks are also due to Ms. Nusrat Jahan for cooperating in chemotaxonomical studies.

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(Received for Publication 3 February 1992)