

A NEW COMBINATION IN ALCEA (MALVACEAE) FROM IRAN

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Alcea tiliacea is reduced into a variety of *Alcea rhyticarpa*. This new combination was made on the base of extensive morphological studies and SEM study of the seed coat surface. Main characters of both varietas and their geographical distributions are presented.

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Key word. *Alcea*, new combination, SEM, Iran.

ترکیب جدیدی از جنس ختمی (*Alcea* L.) در ایران
منیژه پاکروان

گونه *Alcea tiliacea* به سطح واریته ای از *Alcea rhyticarpa* کاهش یافته است. این ترکیب جدید با استفاده از نتایج مورفولوژیک و بررسیهای اسکن پوسته بذر حاصل شده است. پراکنش جغرافیایی واریته ها بر اساس نمونه های هرباریومی و ویژگیهای مورفولوژیک آنها توضیح داده شده است.

INTRODUCTION

The genus *Alcea* L. (*Malvaceae*) is widely distributed through SW Asia. It contains only a few species in Europe (Zohary 1963). Riedl (1976) have mentioned 39 species of *Alcea* and Pakravan (2001) 34 species from Iran. There are a few diagnostic characters in this genus. Only through a very detailed examination in the leaf sequence, in the proportions between involucle and calyx and in configuration of the carpel can a few especially differential characters be revealed. Because of high similarity among some taxa, we used seed coat sculpturing for distinguishing several taxa. Seed coat of some genera of *Malvaceae* has been studied by some authors (Khushk & Vaughan 1987; Paul & Nayar 1987) but it was studied for the first time in *Alcea* (Pakravan 2001). This article contains one new combination based on carpel character and seed coat sculpturing.

MATERIALS AND METHODS

For taxonomic study several specimens from various herbaria (IRAN, TARI, W) were studied. For SEM studies, mature seeds were taken from herbarium specimens and after removal from the carpel, seeds were directly observed at 20 kv with a Philips XL 30 ESEM (Environmental Scanning Electron Microscope). At least 7 mature seeds were examined and measured by SEM. The spermoderm terminology followed Lersten (1981) and Barthlot (1984).

RESULTS AND DISCUSSIONS

Zohary classified *A. tiliacea* (Bornm.) Zohary among the winged carpel species, although no complete wings were observed in the type material. Only the dorsal side of carpel is somewhat keeled shape in this taxon, but it can not be considered as winged.

In a taxonomical study on *Alcea* in north east of Iran, we found two taxa, uniform in leaf and flower shape, indumentum, petal color and carpel. Only stellate hairs in the dorsal channel of carpel in one of them distinguish it from the other. After studying the isotype material in W it was found that *Alcea tiliacea* had carpel with stellate hairs in the dorsal channel, but *A. rhyticarpa* lacks the stellate hairs on the dorsal channel. Based on a previous study on *Alcea*, all studied species show pore like structures on the seed coat (Pakravan 2001). Only two taxa: *A. rhyticarpa* and *A. tiliacea* do not have pore like structures. Moreover the surface on their seed coat were different. In *A. rhyticarpa*, the seed surface have circular or elliptic cells (Fig. 1a) but in *A. tiliacea* the cells are rectangular (Fig. 1b).

The carpel and seed coat do not support separation of *A. tiliacea* at specific level. Therefore, the former is reduced here into a varietal level of the latter.

Alcea rhyticarpa (Trautv.) Iljin, var. **rhyticarpa**

Selected specimens. Khorassan: Sarakhs, Torbat-e jam, 20 km to Saleh abad on the Torbat-e Jam road, 700 m, Runemark & Sardabi 23453 (TARI).

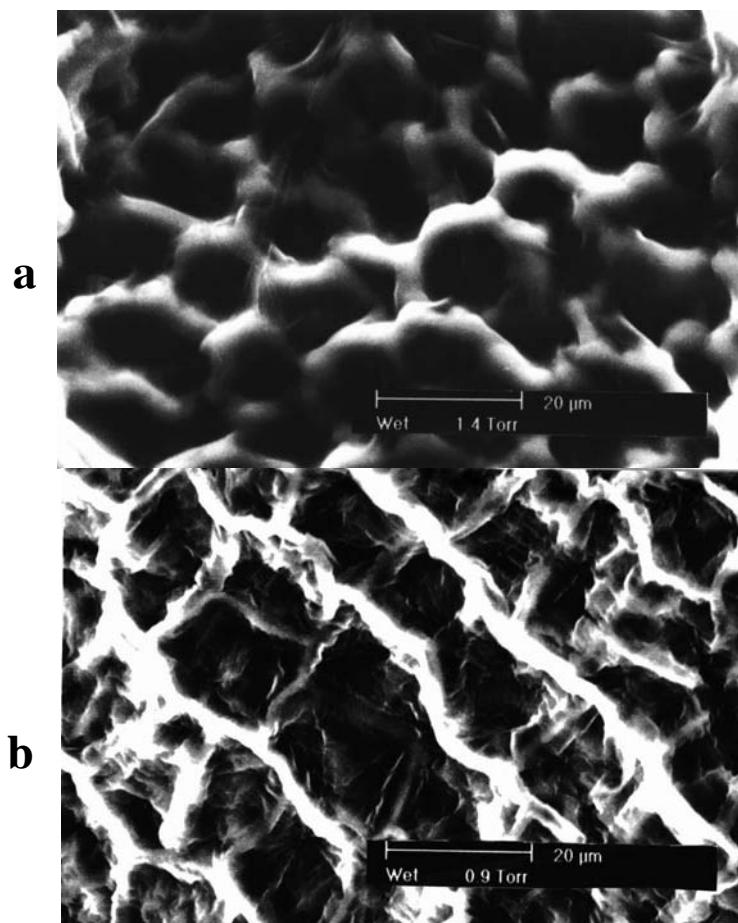


Fig. 1. SEM micrographs of seed surface in: a, *Alcea rhyticarpa* var. *rhyticarpa*, b, *A. rhyticarpa* var. *tiliacea*.

***Alcea rhyticarpa* var. *tiliacea* (Bornm.) Pakravan, comb. et stat nov.**

Syn.: *Althaea tiliacea* Bornm., Fedd. Repert. 36: 169 (1934); *A. tiliacea* (Bornm.) Zohary, Israel J. Bot. 12: 7 (1963).

Selected specimens. Khorassan: in Duruneh Mt. near Pir, 1300 m, Gabriel 28 (W), road of Mashhad to Neyshabur, 20-30 km Mozduran, 650 m, Runemark & Sardabi 23364 (TARI); Daregaz, Chapesh-loo, 700 m, Vafaeu, 25 (TARI); road of Kashmar to Neishabur, 1750 m, Rajamand & Bazargan 32084 (TARI).

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