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Seed morphology of some species of *Tephrosia* PERS. (Fabaceae) from Saudi Arabia Identification of species and systematic significance

With 8 Figures and 3 Tables

Abstract

Seed morphology of eight species belonging to the genus *Tephrosia* PERS. were examined by using light and scanning electron microscopy. Macro- and micromorphological characters, including seed shape, colour, size, surface, epidermal cell shape, anticlinal boundaries, outer periclinal cell wall and relief of outer cell walls, are presented. Two types of basic anticlinal cell wall boundaries and two types of relief outer cell walls are recognized and two different shapes of the outer periclinal cell wall are described. A key for the identification of the investigated taxa based on seed characters is provided.

Introduction

The genus *Tephrosia* PERS. (Fabaceae) comprises around 300 species, distributed in tropical, subtropical and warm temperate regions of the World.

In Saudi Arabia, there are about nine species, four subspecies and varieties of *Tephrosia*, which are mainly distributed in the north-western, western, south and southwestern regions (MIGAHID 1989; CHAUDHARY 2001; CHAUDHARY & AL-JAWAID 1999; COLLENETTE 1985, 1998, 1999).

Scanning electron microscopy (SEM) provides great tool to achieve more accurate seed identification (BRISSON & PETERSON 1976), which could be used as a routine technique in the study of the spermoderm morphology (HEYWOOD 1971; BARTHOLOTT 1984). Nine categories were established by LERSTEN (1981) in his investigation of 340 species of Papilio-

noideae. Also, SUBA RAO & SHANNMUKHA RAO (1992) found three categories of Lersten's establishments. Belonging to the seeds testa patterns, LERSTEN (1981) illustrated a simple reticulate in *T. candida*.

The aim of the present study is to investigate macro- and micromorphological characters of *Tephrosia* seeds in Saudi Arabia, using stereo- and scanning electron microscopes, which expected to be reliable for distinguishing the studied taxa. The work is mainly concentrated on collections of field work as well as herbarium collections from King Abdulaziz University (KUH, KSU and RIY).

Materials and methods

The fresh plant samples were collected from the sites which were reported by MIGAHID (1989), CHAUDHARY & AL-JAWAID (1999), COLLENETTE (1999) and CHAUDHARY (2001); with field survey of the species throughout Saudi Arabia regions (Table 1). The plant specimens nomenclatured according to BOULOS (1999), CHAUDHARY & AL-JAWAID (1999) and COLLENETTE (1999). Mature seeds were collected from dehiscent legumes, then cleaned with alcohol and kept for drying. The macromorphological characters of the studied seeds were carried out using stereo-microscopy (Stemi2000-C) and the measurements, shapes, colour, and the position of hilum were recorded. On the other hand, the mature seeds of the investigated taxa were chosen for SEM study, where seeds were mounted on stubs using double face carbon tape, and coated with gold/palladium at 1.2 kv for 15 minutes under high vacuum in an ion sputter coating unit. The examined samples were