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Datura ferox L. and *D. quercifolia* Kunth *(Solanaceae)* in Algeria

Abstract

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Two weedy *Datura* species found in *Solanum tuberosum* fields in Algeria were identified as new for the Algerian flora. Both produce tropanic alkaloids and are particularly rich in scopolamin.

Introduction

During our prospecting of various regions of Algeria for alkaloid producing plants, two weedy *Datura* species were found that have been identified as *D. ferox* L. and *D. quercifolia* Kunth. The present paper draws attention to these two taxa, productive of tropanic alkaloids which are know for their pharmaceutical properties (Goodwin & Mercer 1983). They add to the many plants with tropanic alkaloids that are known as members of the wild flora of Algeria (Houmani & Cosson 1996).

Material and methods

Both species occur as weeds in *Solanum tuberosum* L. fields in the locality of Rouina, department of Chlef (formerly El Asnam), c. 180 km in the W of Algiers. 15 adult plants, each with at least 3 ripe fruits, were harvested on 15 July 1991. A soil sample was taken for analysis at the foot of each plant.

Species identification was effected with the aid of works on *Datura* by Safford (1922) and Satina & Avery (1959), with assistance from Abdelkader Belouad, responsible for the herbarium of the National Agronomic Institute in Algiers, where vouchers have been deposited.

Aerial parts and roots of 10 plants, each separately, were weighed, dried in the shade, and crushed into powder. Extraction methods and dosage were described by Houmani & al. (1994). 20 extractions were performed in total, for the aerial parts and 10 others for the roots of the different plants. The results represent the average of 3 dosages per extract.

Results and discussion

Edaphic characteristics. – The analyses revealed a muddy soil containing 8.8 % $CaCO_3$, 6.9 % organic matter, and 0.14 % nitrogen, at a Ph of 8.1.

Taxonomy. – *Datura ferox* and *D. quercifolia* do not figure in any work on the Algerian flora (Quézel & Santa 1963, Ozenda 1977). Their salient morphogical features are given in Table 1.

Datura ferox originates from S China and is now widely distributed in the warm regions of the globe. In the Mediterranean region it is naturalised in France, Spain, Italy, Sicily (Tutin & al. 1972), and Palestine (Heller & Heyn 1987), but was not so far reported from N Africa. Bhatt & Saratbabu (1988) report the presence of this species in the deserts and semi-arid zones of Rajasthan in India.

Datura quercifolia originates from a restricted area in Mexico and the SW United States (Satina & Avery 1959). It was not so far reported as naturalised from the Mediterranean area.

In Algeria, both species were presumably introduced with seeds imported for market cultures.

Table 1. Some distinctive morphological characteristics of *Datura ferox* and *D. quercifolia.*

Organ	*D. ferox*	*D. quercifolia*
Stem	green, glabrous, erect, 50 to 150 cm tall, 1 to 1.5 cm in diameter	purple, slightly downy, erect, 60 to 120 cm tall, 0.5 to 1.5 cm in diameter
Leaves	alternate, glabrous, green, angled, grossly sinuate	alternate, slightly downy, green, deeply pinnately lobed as in some oaks
Inflorescence	each fork of the cimosely branched stem bears one flower	as in *D. ferox*
Calyx	slightly less than half as long as the corolla	half as long as the corolla
Corolla	white, longitudinally pleated, 4 to 6 cm long, 5-toothed	pale lavender, 4 to 8 cm long, 5-toothed and with 5 indentations
Anthers	white	purple
Capsule	ovoid, 5-8 × 4-5 cm, very prickly with unequal spines with thick conical bases, slightly acuminate when ripe, regularly 4 valved	ovoid, 6-7 × 4-6 cm very prickly with unequal spines less stout than in *D. ferox*, regularly into 4 valved when ripe
Seeds	black	black

Alkaloid content (Fig. 1) – The aerial parts of *Datura ferox* are richer in major alkaloids (scopolamin + hyoscyamin) than those of *D. quercifolia*. In either species, the aerial parts are richer in major alkaloids than the roots.

The ratio scopolamin : hyoascyamin is 18.3 in *Datura ferox* and 12.4 in *D. quercifolia*.

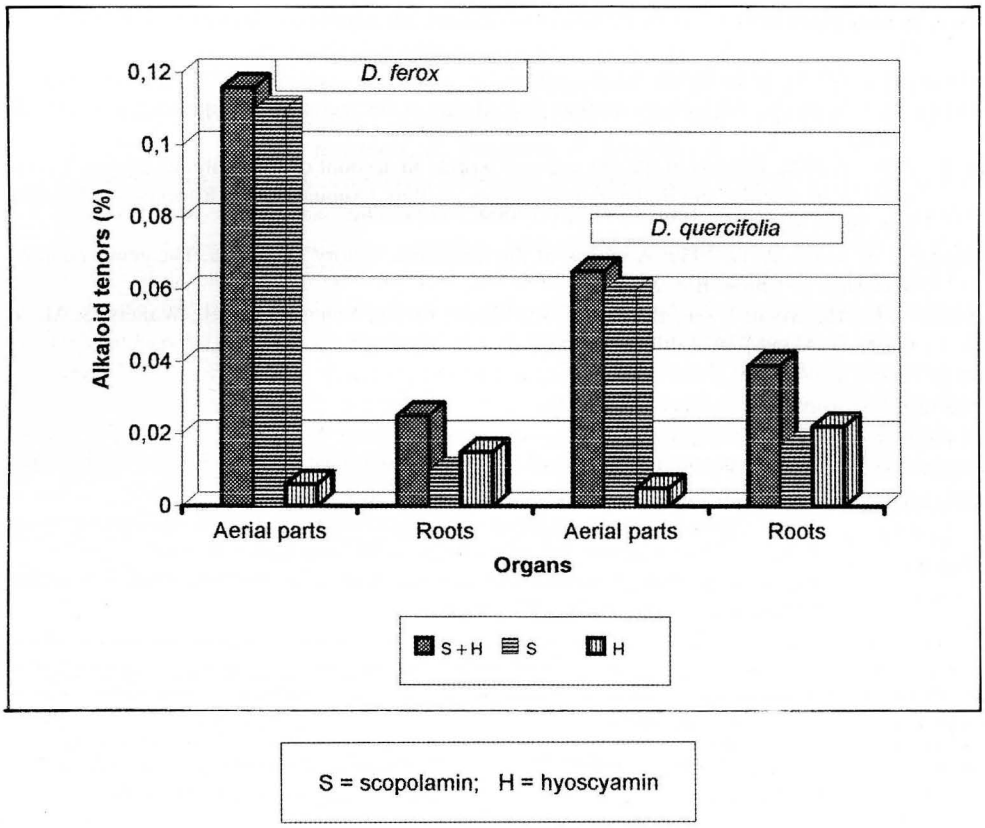

Fig. 1. Alkaloid content (% of dry matter) of *Datura ferox* and *D. quercifolia*.

Conclusion

Datura ferox and *D. quercifolia* are naturalised in Algeria. They grow as weeds on muddy and a slightly basic soil. They are rich in scopolamin. *D. ferox* in particular is an important potential scopolamin source.

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