

A NEW SPECIES OF *BELLEVALIA* (*LILIACEAE* / *HYACINTHACEAE*) FROM IRAN

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Bellevalia wendelboi Maassoumi & Jafari from western Iran (Kurdistan Province) is newly described. It is similar to *Bellevalia macrobotrys* from *Bellevalia* sect. *Nutans* subsect. *Colorata* but differs in having weakly canaliculate leaves, yellow anthers (not violet) and a cordate-ovoid, acuminate capsule (not ovoid and retuse). There are now 19 species of *Bellevalia* in four sections in Iran.

Keywords. *Bellevalia* sect. *Nutans* subsect. *Chlorata*, *Bellevalia wendelboi*, Iran, *Liliaceae*/*Hyacinthaceae*, new species.

INTRODUCTION

Bellevalia Lapeyr. is a genus of bulbous plants traditionally belonging to *Liliaceae*, subfamily *Lilioideae*, tribe *Scilleae* (Engler, 1887), but now usually placed in *Hyacinthaceae*, subfamily *Hyacinthoideae*, tribe *Hyacintheae* (Speta, 1998). It comprises about 65 distinct species of which 18 have been recorded from Iran. These species have been placed in *Bellevalia* sections *Nutans* Feinbrun, *Patens* Feinbrun, *Conica* Feinbrun and *Oxydonta* Losinsk. ex Wendelbo (Feinbrun, 1938; Wendelbo, 1990). The genus is distributed in the Mediterranean region from Morocco to the Caucasus, Iran and Afghanistan (Özhatay *et al.*, 1991). *Bellevalia* was previously believed to be closely related to *Muscari* and *Hyacinthella* by Feinbrun (1938). Pfosser & Speta (1999), however, found *Bellevalia* to be in a clade with *Muscari* and *Scilla* but not with *Hyacinthella*.

In a monograph of the genus *Bellevalia* Feinbrun (1938) recognised 44 species of which nine were recorded from Iran. Intensive collections made by Per Wendelbo increased the number known from Iran to 18 species (Wendelbo, 1990), of which nine are endemic to Iran, some with very restricted ranges.

In addition to the works above other important literature on *Bellevalia* includes Boissier (1854), Baker (1871), Bornmüller (1908), Post (1930), Parsa (1950), Freitag & Wendelbo (1970), Wendelbo (1980), Feinbrun (1986) and Townsend & Guest (1985).

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MATERIALS AND METHODS

During April–May each year between 2001 and 2003 we studied the herbarium material at TARI and IRAN. In addition, specimens of *Bellevalia* were collected from northern, southwestern, western and central Iran. The type specimens from B, BG, E, G, GB, K, NAP, P, S, W and WU, on loan to the Berlin Botanical Museum, were also studied. After intensive collection and identification of the material a new species was identified and is here described as *Bellevalia wendelboi*.

Specimens from TARI of *Bellevalia wendelboi* and the closely related *B. macrobotrys* were analysed for leaf anatomical and pollen characters. The leaf material was rehydrated with ethanol, glycerine and water, then fixed with formalin–acetic acid–alcohol (FAA) and dehydrated with an ethanol–butanol solution. Cross-sections of the central part of the blades of both species were cut by microtome (12 µm thick) and dyed with safranin and Fast Green (Johnson, 1940; Chamberlain, 1990). The pollen of both species was extracted and acetolysed (Erdtman, 1952; Moore *et al.*, 1991), then placed on stubs, coated with a gold–palladium alloy and observed with a scanning electron microscope. Pollen terminology was adapted from Punt *et al.* (1994).

***Bellevalia wendelboi* Maassoumi & Jafari, sp. nov. Fig. 1.**

Bellevalia macrobotrydi Boiss. similis sed foliis margine scabridis, inflorescentia brevior, floribus sterilibus ascendentibus differt. Flores fertiles tubuloso-campanulati nec tubulosi; antherae luteae nec violaceae; capsula cordato-ovoidea, leniter acuminata nec ovoidea retusae. – Type: Iran, Kurdistan, Marivan to Tigtig, 1680 m, *Maarofi & Karegar* 990 (holo TARI).

Bulb 5 × 4 cm, ovoid or conical with brown tunic. *Leaves* 3–4 in number, c.46 × 1.8 cm, strap-shaped, weakly canaliculate, with scabrous margin, shorter than raceme. *Scape* 1, c.37 cm long. *Raceme* c.23 × 4–5 cm, lax, oblong-cylindrical; rachis violet at apex; apex of raceme with sterile flower ascending, violet or brown; lower pedicels c.1.8 cm, horizontal or deflexed; upper pedicels 0.7–1 cm; fertile flowers 65–70 in number, c.1 × 0.3 cm, lower flowers recurved, upper flower horizontal, tubular-campanulate, oblong, pale brown-violet; lobes 2–3 × 1.5 mm, spreading, apex triangular to acuminate, concolorous with tube, with pale brown nerves. *Anthers* 1.5–2 mm, yellow. *Capsule* cordate-ovoid, weakly acuminate.

Distribution. Iran: Kurdistan.

Etymology. This new species is named in honour of Per Wendelbo who studied *Bellevalia* of Iran for Flora Iranica.

Additional specimen studied. IRAN. Kurdistan, Kermanshah, Kerend, *Sharif* 29661/1 (IRAN).

Bellevalia wendelboi is similar to *B. macrobotrys* Boiss. from *Bellevalia* sect. *Nutans* Feinbrun subsect. *Colorata* Feinbrun in having relatively broad scabrid leaves which

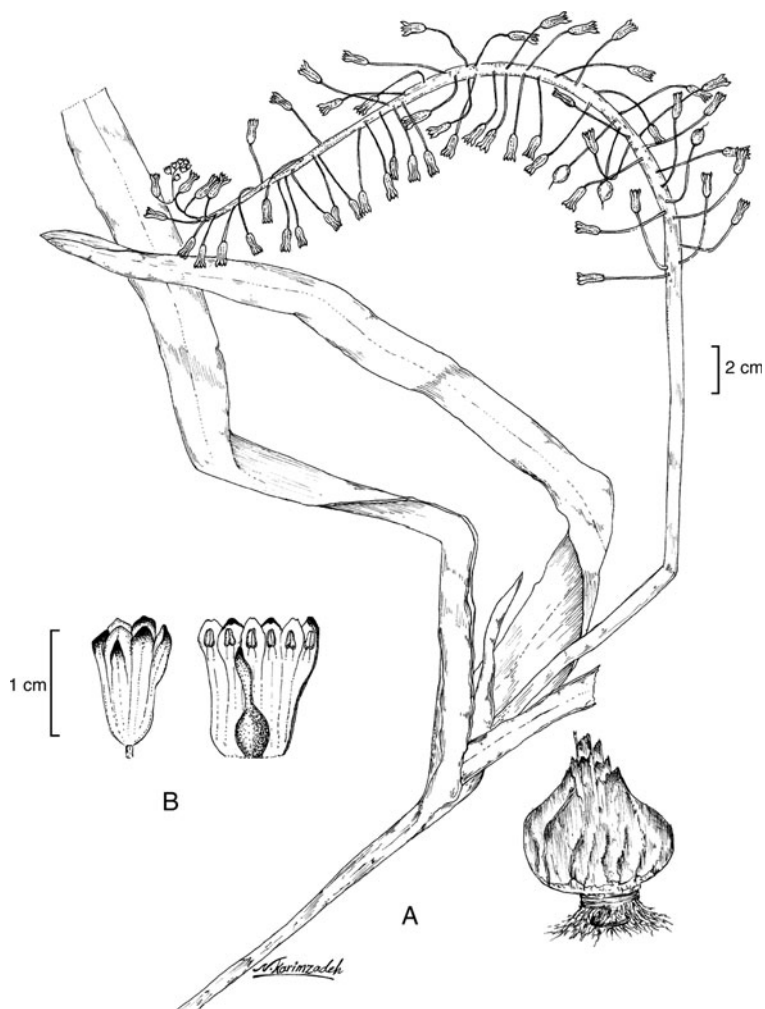


FIG. 1. *Bellevalia wendelboi* Maassoumi & Jafari. A, habit; B, fertile flower (from holotype: Maarofi & Karegar 990, TARI).

are longer than the scape, in its fruiting pedicels which are up to 2.5 cm long, in the raceme with a sterile flower, and in the deflexed lower pedicels. It differs in having weakly canaliculate leaves, yellow anthers (not violet) and a cordate-ovoid, acuminate capsule (not ovoid and retuse).

In addition air spaces are present in the leaf mesophyll of *Bellevalia macrobotrys* but not in *B. wendelboi* (Figs 2, 3). In the palynological study the P/E ratios (polar axis length/equatorial axis length) were 1.59 and 1.43 for *Bellevalia macrobotrys* and *B. wendelboi*, respectively. The pollen ornamentation for both species is negative reticulate but semi-tectate with wide and deep muri in *Bellevalia macrobotrys* and tectate with narrow and shallow muri in *B. wendelboi* (Table 1).

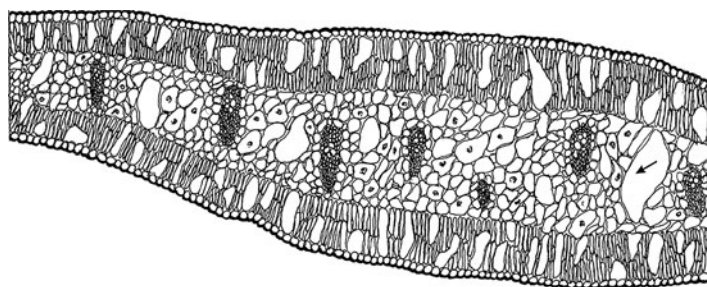


FIG. 2. Cross-section of leaf of *Bellevalia macrobotrys*. The arrow points to an air space.

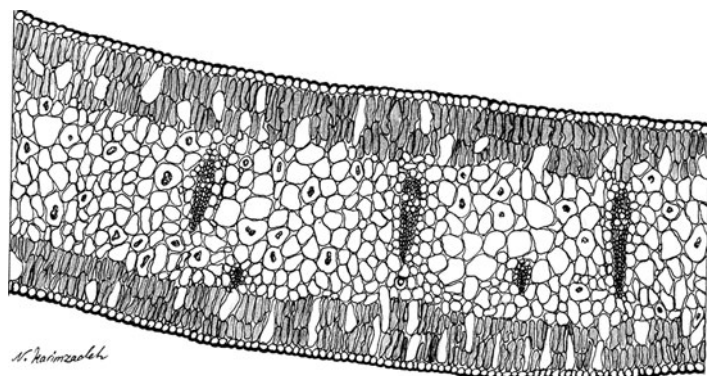


FIG. 3. Cross-section of leaf of *Bellevalia wendelboi*.

TABLE 1. Comparison table for *Bellevalia wendelboi* and *B. macrobotrys*

Character	<i>B. wendelboi</i>	<i>B. macrobotrys</i>
Anther colour	Yellow	Violet
Fruit shape	Cordate-ovate, apex acuminate	Ovoid, apex retuse
Air spaces in leaf mesophyll	Absent	Present
P/E ratio	1.43	1.59
Tectum status	Tectate	Semi-tectate

P/E, polar axis length/equatorial axis length.

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