Urocystis jaapiana (*Urocystidaceae*) on *Ruscus hypophyllum* (*Ruscaceae*) from Algeria

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Abstract. The rare *Urocystis jaapiana,* collected on a new host plant species, *Ruscus hypophyllum* in Algeria, is described, illustrated, and compared with the type specimen on *R. aculeatus.*

Key words: Algeria, *Liliaceae s. lat.,* new host plant, *Ruscus hypophyllum,* smut fungi, *Urocystis jaapiana*

Introduction

The genus *Ruscus* L., in the order *Asparagales,* family *Ruscaceae* (earlier *Liliaceae*), has six species in western and southern Europe, Macaronesia, NW Africa, SW Asia, and the Caucasus. On *Ruscus* only one smut fungus is known, *Urocystis jaapiana.* It was collected and described on *R. aculeatus,* nearly one hundred years ago, in Northern Italy. It was also collected, on the same host plant by R. Maire, on 14 Nov 1918, in Algeria, at Teniet-el-Had., and in Spain, without locality, before 1926 (comp. Almaraz 2002: 68). No further report of this smut fungus was found in the literature.

Recently, the junior author collected *Urocystis jaapiana* on a new host plant species, *Ruscus hypophyllum,* in Algeria. At this occasion, we studied this smut and compared it with the type specimen. It is presented here to draw the attention to this rare smut, which may occur in other places where *Ruscus* occurs.

Materials and Methods

Sorus structure, spore ball, spore and sterile cell characteristics were studied using dried herbarium specimens. For light microscopy (LM) spore balls were suspended in a small droplet of lactophenol, covered with a cover glass, gently heated to boiling point to rehydrate the spores and to eliminate air bubbles from the preparation, and studied at 1000× magnification. For number of spores within the spore balls, 500 spore balls were counted. For scanning electron microscopy (SEM), spore balls were placed on double-sided adhesive tape, mounted on a specimen stub, sputter-coated with gold-palladium, c. 20 nm, and examined in a SEM at 10 kV.

Results

Comparative studies showed that the smut on the new host plant, *Ruscus hypophyllum,* is conspecific with the type species on *R. aculeatus.* A revised description and its illustration are presented below.

Urocystis jaapiana Sacc., Ann. Mycol. **13**: 137, 1915.
Tuburcinia jaapiana (Sacc.) Liro, Ann. Univ. Fenn. Abo. A **1**(1): 54, 1922. — Type on *Ruscus aculeatus,* Italy, Brescia, Gardone, at the lake Lago di Garda, 23 May 1912, O. Jaap, (PAD!).

Sori (Fig. 1A) as large swellings on twisted stems, or in young, swollen shoots (turions), initially covered by the epidermis which splits irregularly exposing the blackish brown, powdery mass of spore balls. **Spore balls** subglobose, ellipsoidal

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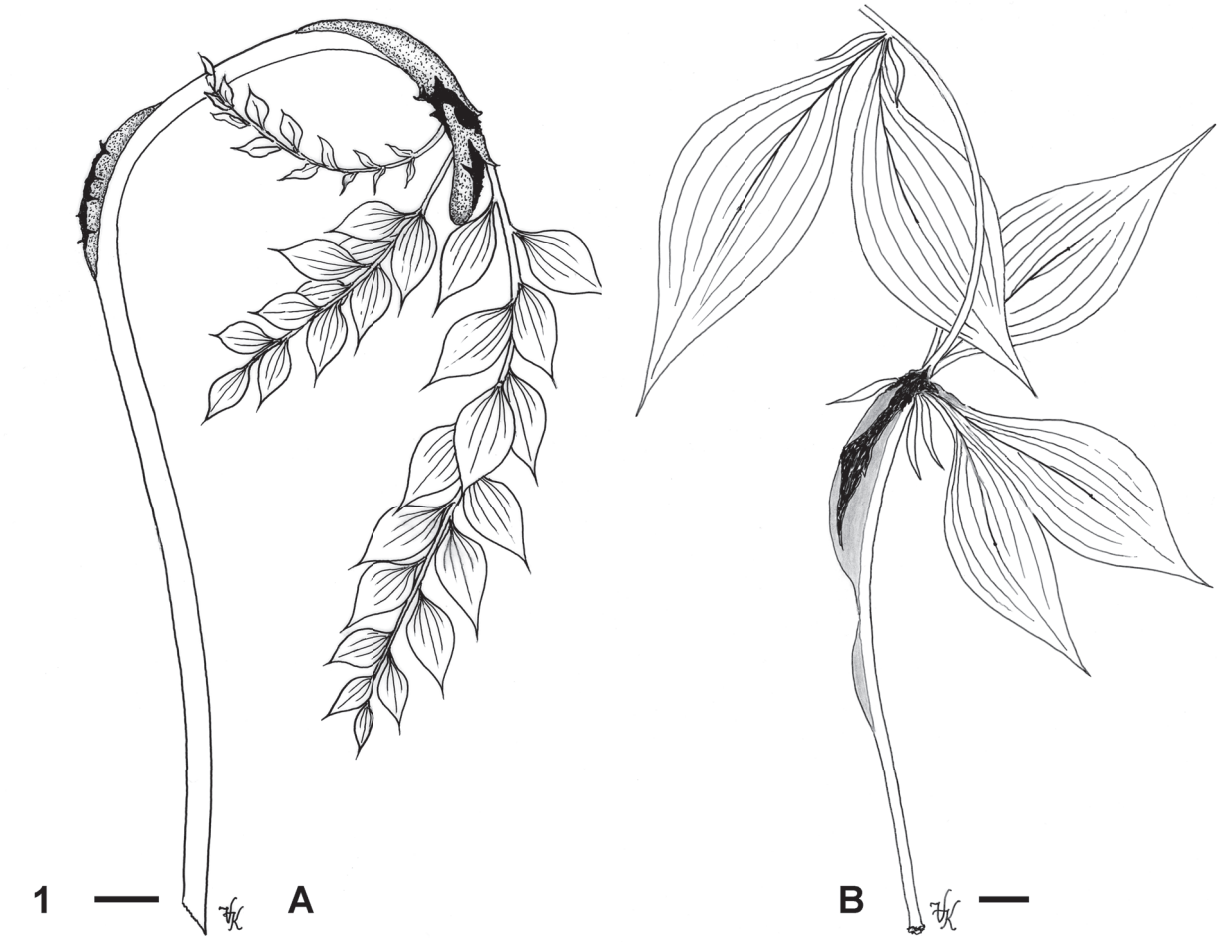
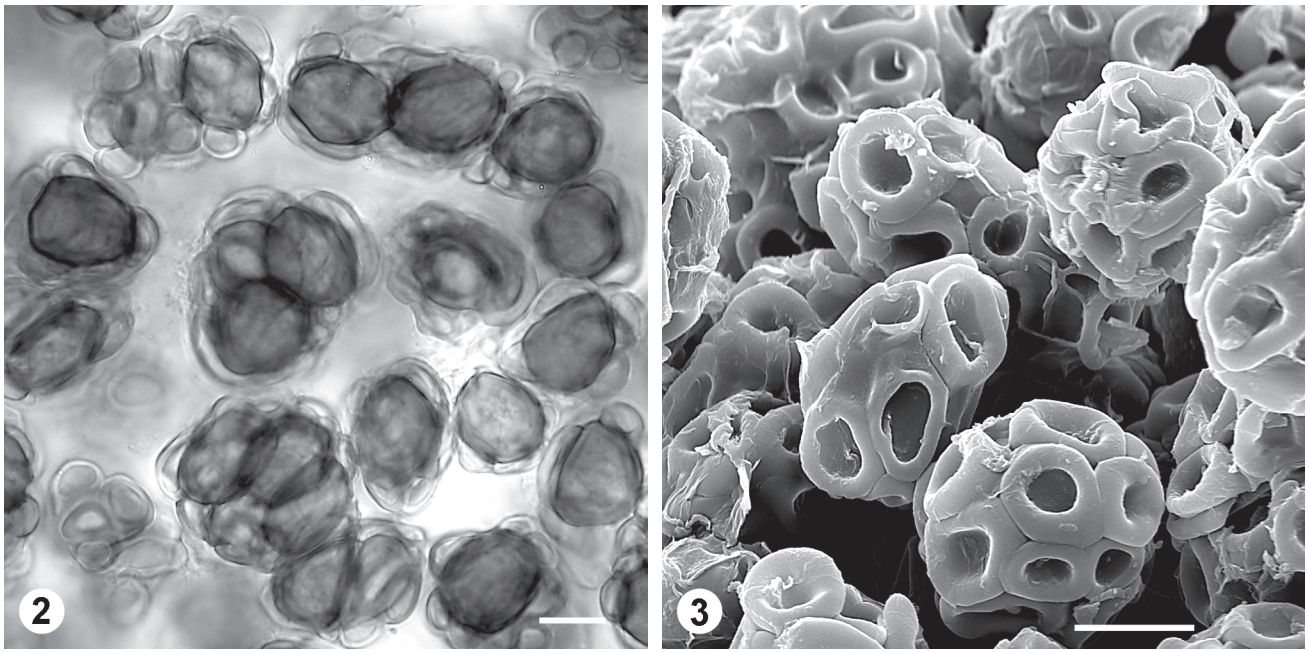


Fig. 1. Sori of *Urocystis jaapiana.* Habit. **A** – on *Ruscus aculeatus.* **B** – on *R. hypophyllum.* Bar = 1 cm



Figs 2-3. Spore balls, spores, and sterile cells of *Urocystis jaapiana* on *Ruscus hypophyllum* in LM and in SEM (HUV 21 512). Bars = 10 μm

to irregular, 15-28 × 15-40 µm, composed of 1-4 (–6) spores (1 = 42.6 %, 2 = 35.4 %, 3 = 13.8 %, 4 = 6.2 %, 5 = 1.8 %, 6 = 0.2 %) completely or incompletely surrounded by sterile cells. **Spores** subglobose, ovoid, ellipsoidal or elongated, often irregular with slightly flattened sides, (9–)10-16 × 12-20 µm, reddish brown; wall even, c. 0.5 µm thick, smooth. **Sterile cells** subglobose, ellipsoidal, elongated or irregular, with one or several flattened sides, 4-8 × 5-16 µm, pale yellow; wall even or unevenly thick, 0.5-2.5 µm wide, smooth, collapsed in old specimen.

On *Ruscaceae* (*Liliaceae s. lat.*): *Ruscus aculeatus* L., *R. hypophyllum* L.

Distribution: S Europe (Italy, Spain), N Africa (Algeria).

Discussion

Urocystis jaapiana, as most of the 23 known *Urocystis* species on *Liliaceae s. lat.,* is a rare smut (Vánky, unpublished data). A comparison of *Urocystis jaapiana* on *Ruscus hypophyllum* (Figs 1B, 2, 3) with the type specimen showed that they are conspecific. Spore ball, spore and sterile cell morphology, including measurements, are nearly identical. The number of the spores within the spore balls, which is a good differentiating character for species of *Urocystis,* is also similar. For the specimen on *Ruscus hypophyllum* the following values were obtained: 1 = 42.4 %, 2 = 33.4 %, 3 = 16.6 %, 4 = 6.2 %, 5 = 0.8 %, 6 = 0.6 % (comp. with the values of the type specimen in the description). Such a comparison is important, knowing that during speciation, some *Urocystis* on the same host plant genus differentiated into several species. A good example of this are the four *Urocystis* species on *Hypoxis* (*Hypoxidaceae, Amaryllidaceae s. lat.*): 1. *U. aurea* Vánky (2004: 81) on *H. aurea* Lour. from India, 2. *U. glabella* Vánky & R.G. Shivas (in Shivas & Vánky 2007: 9) on *H. glabella* R. Br. from Australia, 3. *U. hypoxis* Thaxter (1890: 156) on *H. decumbens* L., *H. decumbens* var. *major* Seub., *H. domingensis* Urb., and *H. erecta* L. (*H. hirsuta* (L.) Coville) from North America and Antilles, and 4. *U. thaxteri* Vánky (2001: 270) on *H. acuminata* Baker, *H. angustifolia* Lam., *H. costata* Baker, *H. floccosa* Baker, *H. galpinii* Baker, *H. hemerocallidea* Fisch & Mey, *H. kraussiana* Buchinger, and *H. rigidula* Baker from South Africa.

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