MYCOLOGICAL NOTES ON SOME INDIAN RUST FUNGI

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AECIAL and uredinial stages of Puccinia cephalandrae-indicae:

Sydow and Butler[1] described *Puccinia cephalandrae-indicae* based on a rust infected specimen of *Coccinia indica* (= *Cephalandra indica*). They described telia and teliospores only. The only other report of this rust from India is that of Rangaswami *et al*[2] but it is not clear which spore forms they observed. Recently, we have examined rusted *C. indica* having both aecial and uredinial stages. They are described here.

Aecia hypophyllous, rarely epiphyllous, dense, closely aggregated but rarely coalescing, covering the entire lamina of the leaf, orange brown, 1 mm diam, cupulate, subepidermal, erumpent, pulverulent, peridiate; aeciospores 18–30 × 13.5–18 μm, ovate to ellipsoid, often papillate, wall 2 μm thick, verrucose.

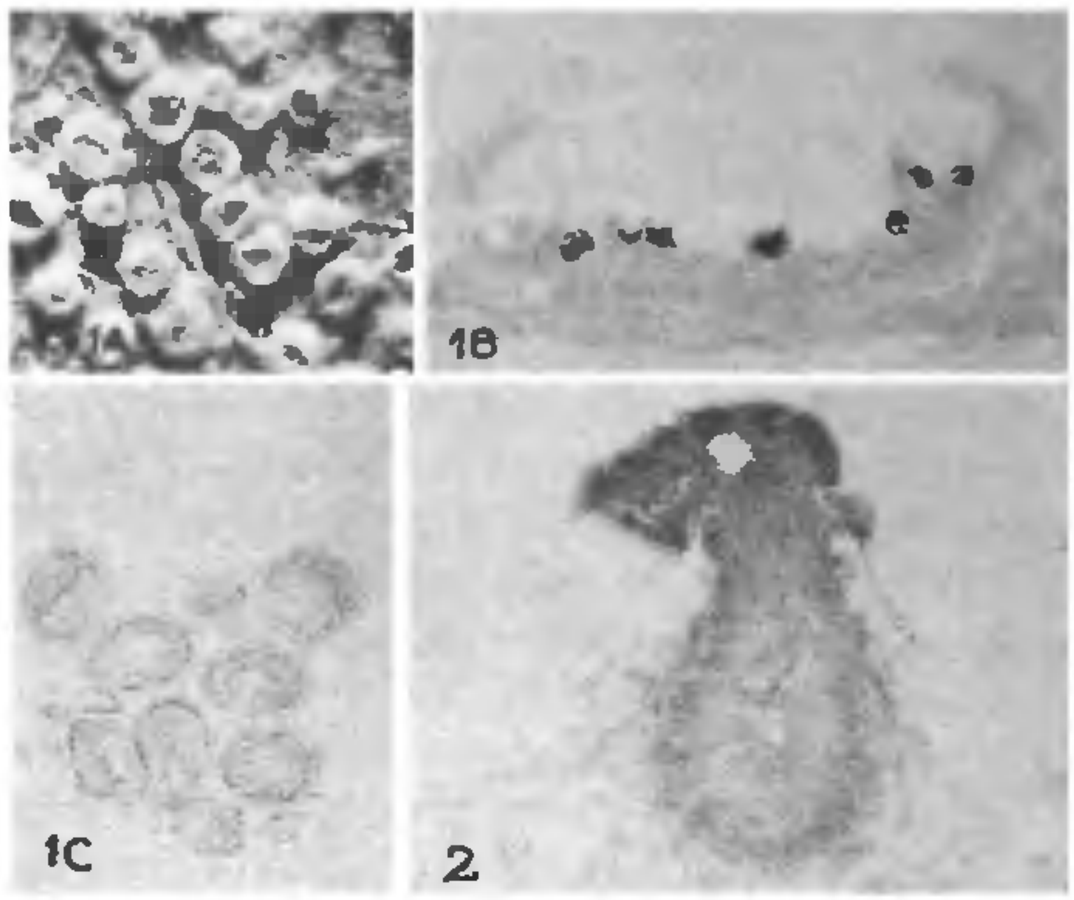
Uredinia hypophyllous, scattered, subepidermal, erumpent, pulverulent, ruptured epidermis conspicuous, cinnamon brown, 0.2–0.5 mm diam; urediniospores 24.5–35 × 17.5–28 μm, globose, subglobose, ovate to ellipsoid, wall 2–3.5 μm thick, golden yellow, echinulate, germpores not clear but probably 2, equatorial.

Spermogonial stage of Puccinia abutili:

The rust taxon *Puccinia abutili* was named by Berkely and Broome[3]. Sydow and Sydow[4] gave the geographical distribution and host range of this fungus. From India the occurrence of this rust fungus was reported by Mundkur and Thirumalachar[5] and Salam and Ramachar[6].

Sydow and Sydow listed 11 species of *Puccinia* parasitizing the members of the family Malvaceae. Of these 11 species, except for *P. sphaeracleae* Ell. and Ev., all the other species, including *P. abutili*, are microcyclic. However, a recent collection of rust-infected specimens of *Abutilon indicum* Sweet showed spermogonia in addition to telia as reported here.

The spermogonia are hypophyllous with a yellow halo around them, minute, aggregated in small groups, glossy transluscent with pale orange coloured dried up gummy exudate at the top. Vertical section of the leaf revealed flask-shaped spermogonia with a strongly convex hymenium. The spermatiophores are hyaline, smooth, thin walled, and cut off spermatia acrogenously. They collect at the mouth of the spermogonium. Spermogonia measure 140 μm in height and 105 μm wide. Growth of spermogoium is determinate with well-developed periphyses, type 4 of Hiratsuka and Cummins[7].



Figures 1 & 2. 1. *Puccinia cephalandrae-indicae*, **A.** Surface view of *Coccinia indica* leaf showing cup-shaped aecia × 50. **B.** Vertical section of an aecium with aeciospores × 250. **C.** A group of urediniospores × 400. **2.** *Puccinia abutili*. A vertical section of the leaf showing flask-shaped spermogonium × 250.

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Figure 1. 22 bivalents of diakinesis.

Figure 2. 22 bivalents at metaphase.

NATURAL TETRAPLOIDY IN THE GENUS *FAGONIA* L. (ZYGOPHYLLACEAE)

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FAGONIA L. comprises about 50 species mainly distributed in the dry regions of the old and new world. Only 8 species have been subjected to cytological investigation so far; the chromosome numbers reported[1-3], suggest that the genus is tetrabasic with basic numbers 9, 10, 11 and 12.

During the course of the revision of the Indian species of *Fagonia* L., cytological studies on some of the taxa occurring in Rajasthan and Gujarat were carried out to assess the possibility of utilising the data for taxonomic treatment.

The chromosome numbers were determined from acetocarmine squashes of pollen mother cells after fixing the flower buds in cornoy's fluid (6:3:1). The haploid chromosome number in *Fagonia bruguieri* DC. var. *rechingeri* Hadidi collected from Jaisalmer, Rajasthan (Voucher No. P. Singh-7181, BSJO) was found to be 22 (figures 1 & 2). Incidentally it is not only the first chromosome report for this taxon but is also the only record of natural polyploidy in the genus; the other species of *Fagonia* L. reported so far, are all diploids with $n = 9$, 10, 11 and 12. The chromosome showed normal pairing, resulting in the formation of 22 bivalents. These bivalents were usually of ring type with both terminal and interstitial chiasmata. No multivalent associations were found, thus suggesting that it is of allopolyploid origin. Meiosis was regular and normal tetrads were formed. The fertility of the pollen grains as ascertained by their stainability with acetocarmine was 92.5% and they measured 32 × 23 μ. *Fagonia bruguieri* DC. var. *rechingeri* Hadidi has hitherto been reported only from Iraq, Iran, Afghanistan and Pakistan[4]. The present report from Jaisalmer is, therefore, the first record of its occurrence in India. This variety differs from typical variety *bruguieri* in having all leaves unifoliolate, sparcely glandular to glabrous.

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