Validity of the Rust Genus *Kernkampella*

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Kernkampella Rajendren is a new genus of Uredinales based on the rust species parasitic on *Breynia patens* Rolf. The species was originally described as *Ravenelia breyniae-patentis* Mundkur and Thirumalachar (1946). Rajendren (1970a) separated this species from *Ravenelia* Berkeley on the basis that the teliospores could be individualized from the compound head, if warmed in lactophenol and pressed under a cover glass. He created the new genus *Kernkampella* to accommodate this species along with *Ravenelia breyniae* Sydow parasitic on *Melanthesa* (*Breynia*) *rhamnoides* Blume. He has made some additional observations of secondary importance to support the creation of the new genus (Rajendren 1970b). He noted that the teliospores of *Kernkampella* are borne on a typically saucer-shaped epipatella-like structure, the apical portion of the stalk is directly attached to the cystidial mother cells in *Kernkampella* in contrast to *Ravenelia*; the germ pores of teliospores of *Kernkampella* are located on the upper teliospore wall, whereas in *Ravenelia* they are on the lower surface.

Ravenelia is the only genus in the Uredinales, exhibiting the high degree of variation in the morphology of different developmental stages, as stated by several earlier workers and the solidarity of the genus has been maintained since its inception based on its indisputable characters such as the telial head and the compound pedicel. Now that a new genus has been erected comprising some species of Ravenelia, the authors considered it worthwhile to compare the various characters of the new genus with those of the unquestioned species of *Ravenelia* such as *R. emblicae* Sydow, *R. hobsoni* Cooke, *R. ornata* Sydow, *R. sessilis* Berkeley and *R. taslimii* Mundkur.

Separation of individual teliospores from the telial head was tested in a few species including *R. breyniae*. This character depends on the extent of warming the teliospore heads and the amount of pressure exerted on the cover glass. *Ravenelia sessilis* was the only species among the 5 species tested, in which the teliospores did not separate under light to heavy pressure, whereas in *R. breyniae*, *R. emblicae*, *R. ornata* and *R. taslimii*, the teliospores separated under varying degrees of pressure. Hence, the character on which the genus *Kernkampella* is mainly based, appears unstable resting on the jedge-

ment of an individual and an exact line of demarcation cannot be drawn separating the species of *Ravenelia* and *Kernkampella*. This indicates that the establishment of a separate genus based on such unstable character(s) is unwarranted.

The development of the telial head of *R. breyniae* was traced by SINGH (1967). The species *R. ornata, R. sessilis* and *R. taslimii* were also observed to compare with *Kernkampella breyniae-patentis* (HIREMATH and PAVGI 1976). Epipatella-like structure was described for the species of *Kernkampella*. *R. breyniae* considered as a species of *Kernkampella* (RAJENDREN 1970 b) did not show the presence of epipatella-like structure either during development or after maturation of the teliospores (SINGH 1967). Several sterile cells formed just below the teliospores were noted in a mature telial head of *R. taslimii* and a few such cells were observed in *R. sessilis* (HIREMATH and PAVGI 1976). Progressive developmental studies of these species showed that these sterile cells that RAJENDREN (1970 b) refers as an epipatella-like structure were undeveloped cystidial mother cells. The apical portion of the pedicel is directly attached to sterile cystidial mother cells in the species of *Ravenelia* that were studied and described as in *Kernkampella breyniae-patentis* by RAJENDREN (1970 b). These sterile cystidial mother cells do not become converted into pendulous cysts, as they are attached to the pedicel. Further, TYAGI (1973) observed that the layer of stalk cells or epipatella-like structure on the ventral surface of teliospore heads of some *Ravenelia* species is not considered a character of generic importance, since the number and sequence of cell division in the telial head vary in different species.

RAJENDREN (1970 b) concludes that the germ pores are situated on the lower surface of teliospores in the species of *Ravenelia*. SINGH (1967) reported detailed observations of germination and chromosomal behavior in the germinating teliospores of *R. breyniae, R. emblicae, R. hobsoni* and *R. taslimii*. He observed the germination of teliospores by a promycelium from the outer surface (where the germ pores were located) in all 4 species and in no case did he note the location of promycelium on the lower surface of the teliospores. RAJENDREN (1970 b) studied microtomed sections of the rust pustules, which are neither a suitable material nor technique to locate the germ pores of the teliospores. The photographs presented by RAJENDREN do not show attachment of promycelium to the teliospores.

The comparison of all these morphological characters indicates that *R. breyniae-patentis* is indistinguishable from other species of *Ravenelia*. The introduction of this new genus *Kernkampella* has created confusion without fulfilling the basic concept of erecting a new genus in the Uredinales. THIRUMALACHAR and MUNDKUR (1950) commenting on the generic characters of *Ravenelia* stated: "If the characters presented by the various species are strictly interpreted,

the genus can be split into 6 or more separate genera .... Although taxonomically an unorthodox procedure, it seems best to preserve and adopt the procedure long established in employing the generic name *Ravenelia* with *Haploravenelia*, *Pleoravenelia* and *Neoravenelia* as Sections". Even the well-established and most conservative characters such as the position of a pycnium relative to the host tissue (HIREMATH and PAVGI 1975, PAVGI and SINGH 1969), the type of aecium and morphology of teliospores have not been utilized to break a rust genus into several genera. *Kernkampella* may, therefore, be considered synonymous with *Ravenelia*.

Acknowledgement

The first author (RVH) expresses his gratitude to the Indian Council of Agricultural Research, New Delhi, for the award of a Senior Research Fellowship.

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