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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 breuniae-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 breuniae 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 saucershaped 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 brevniae-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 porces 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*.

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