Kokkalera, a new Genus of Erysiphaceae

By K. M. Ponnappa

Commonwealth Institute of Biological Control Indian Station, Bangalore (6) India

(With 1 Fig. in the text)

Croton bonplandianus Bail. (= C. sparsiflorus Morong.) is a cosmopolitan and gregarious weed native to Paraguay in South America but introduced in South India.

An interesting powdery mildew fungus was collected by the writer first on February 12, 1967 on the leaves of *C. bonplandianus*. Only two out of a large number of infected leaves examined carried the perfect stage of the fungus. Search for the perfect stage was continued till the end of March, but it was in vain. Again on January 20, 1968, the mildew appeared in the same area and some more leaves containing cleistothecia studded within mycelium were collected . It is very interesting to note that out of a large number of plants growing wild, only one plant carried heavy infection of *Oidium* and on a few leaves, its ascigerous stage. A heavy infestation of the hyperparasite *Ampelomyces* was found on other leaves examined.

Yarwood (1957) has recognised seven genera. Thirumalachar (1947), Chiddarwar (1959) and Viégas (1944) have described one genera each of Erysiphaceae. There are, therefore, ten genera of Erysiphaceae recognised on the basis of location of the mycelium, the types of appendages and the number of asci in the perithecia. The fungus under study slightly resembles the genus Sphareotheca Lév., which is characterised by the possession of only one ascus in the cleistothecium, indefinite mycelioid appendages and in the Oidium stage has conidia containing fibrosin bodies. Nevertheless, the present fungus eventhough contains only one ascus and fibrosin bodies in the conidia in the *Oidium* stage, it markedly differs in the complete absence of appendages, which is one of the important distinguishing characters used in the classification of the powdery mildews. It is, therefore, proposed to erect a new genus, Kokkalera, (a name derived from a country dialect to denote dry leaf on which this fungus was collected) to accommodate this fungus whose English and Latin descriptions are as follows:

Kokkalera Ponnappa gen. nov. (Fig. I, B & C).

Mycelium amphigenous, hyaline, white shining growth, ectophytic, effused to sub-dense, persistent; haustoria epidermal, cleistothecia brown to dark brown, solitary or gregarious, hypophyllous, attached to the substratum by means of light brown, septate, irregular, mycelioid structures. No appendages present. Asci and ascospores immature.

Mycelium amphigenum, hyalinum, album, nitidum, ectophyticum, effusum vel subdensum, persistens. Haustoria epidermalia, cleistothecia brunnea vel umbrina, solitaria vel gregaria, affixa ad substratum structuribus brunnescentibus, septatis, irregularibus, mycelioideis. Nulla appendicula. Asci ascosporaeque immaturae.

Kokkalera crotonis Ponnappa sp. nov.

Infection patches hypophyllous, rarely epiphyllous, white shining, effused to sub-dense, persistent, scattered or gregarious; mycelium hyaline, ectophytic, septate, smooth, branched, creeping, covering the entire underside of the leaf giving a silvery white appearance; haustoria epidermal, globose or oval, evanescent; conidia in short chains, unicellular, hyaline, oval, oblong or doliform, thin-walled, 7.25—9.50 μ . Perithecia superficial, profuse, solitary or gregarious, brown to dark brown, hypophyllous, oval, mostly globose with broad concave and irregular, thin-walled obscure cells, 107.00—121.50 \times 97.25—121.50 (av. 102.00 \times 116.75) μ . No appendages present. Asci hyaline, globose or ovoid and immature. Ascospores hyaline, ovoid, unicellular, probably eight.

Habitat: On living leaves of *Croton bonplandianus* Bail., January 20, 1968, Palace Upper Orchard, Bangalore, Mysore State, leg. K. M. Ponnappa, Herb. IMI 134073, England (type).

Fragmenta infecta hypophylla, raro epiphylla, alba nitida, effusa vel subdensa, persistentia, sparsa vel gregaria; mycelium hyalinum, ectophyticum, septatum, laeve, ramosum, serpens, superficiem inferiorem folii omnino celans, aspectum argenteum creans. Haustoria epidermalia, globosa vel ovalia, evanescentia. Conidia brevicatenata, unicellulata, hyalina, ovalia, oblongata vel doliiformia, tenuitunicata, 7.25—9.50 μ . Perithecia superficialia, profusa, solitaria vel gregaria, brunnea vel umbrina, hypophylla, ovalia, plerumque globosa, cellulis amplis, concavis, irregularibus, tenuitunicatis, 107.00 — 121.50 \times 97.25 — 121.50 (med. 102.00 \times 116.75) μ . Nulla appendicula. Asci hyalini, globosi vel ovoidei, immaturi. Ascosporae hyalinae, ovoideae, unicellulatae, versimiliter 8. *O i d i u m* sp. (Fig. I. A).

Mycelium ectophytic, hyaline, smooth, branched, septate, creeping 9.25—10.50 μ in width, forming thick coating on the lower surface and very sparse on the upper surface of the leaves; haustoria globose or oval, epidermal measuring 7.40—8.50 μ in diameter; conidiophores hyaline, composed of 5—6 cells in chains and up to 150 μ long; conidia unicellular, hyaline, oval, oblong or doliform, thin-walled, 9.25—13.23 \times 7.25—8.50 μ , in chains of 3—5.

Ampelomyces sp.

At the advanced stage of infection of the mildew, it was found

 $\mathbf{5}$

to be heavily parasitized by this hyperparasite. Pycnidia brown, numerous, oval, obovate to irregularly shaped, $59.50-76.00 \times 37.25-52.25$ (av. 63.25×43.25) μ . The conidia were oval, obovate, fusiform-elliptic or naviculate, unicellular, hyaline to subhyaline, $4.75-9.30 \times 2.75-3.75$ (av. 6.95×3.50) μ .

Infection occurs on leaves, petioles and occasionally on stems in the form of white powdery patches of variable extent. Severe infection of *Oidium* result in the premature droping and death of affected parts.

It may be of interest to note that there are two genera of Ery-



Fig. I. Kokkalera crotonis gen et sp. nov. A. Oidium sp. 1. Conidiophore, 2. Section showing conidiophore and haustoria, 3. Conidia, 4. Germinating conidia, B. Photomicrograph of cleistothecium, C. Camera lucida drawing of 1. cleistothecium, 2. Cleistothecium with a single immature ascus, 3. Ascus

siphaceae recorded on Croton. Deighton and Pirozynski (1965) have recorded Uncinula crotonis Pirozynski on C. megalobotrys from Zambia and Prasad and Sinha (1962) have recorded an Erysiphe sp. on C. sparsiflorus from Muzaffarpur, Bihar, India. ©Verlag Ferdinand Berger & Söhne Ges.m.b.H., Horn, Austria, download unter www.biologiezentrum.at

Summary

Kokkalera, a new genus of Erysiphaceae, is described with K. crotonis as type which is characterised by complete absence of cleistothecial appendages and having only one ascus to the cleistothecium.

Acknowledgements

The author is grateful to Dr. V. R. R ao, Entomologist-in-charge, Indian Station, CIBC for encouragement and permission to publih this paper. He is highly indebted to Dr. C. Booth, Commonwealth Mycological Institute, England both for critically going through the manuscript and useful suggestions, and to Mr. P. Basu, Scientific Information Officer, CMI, England for Latin rendering of the new genus and species.

References

Chiddarwar, P. P. (1959). Salmonomyces, a new member of the Erysiphaceae. Sydowia, 13: 55-56.

Deighton, F. C., & Pirozynski, K. A. A. (1965). Microfungi I. — African species of Uncinula; some species of Fusicladiella; Various hyphomycetes, mainly tropical. Mycol. pap. C. M. I., 101, 13.

Prasad, S. S., & Sinha, B. D. (1962). Fungi causing diseases at Muzacarpur — I. Proc. nat. Acad. Sci. India, 32: 435-438.

Thirumalachar, M. J. (1947). Astomella, a new of Perisporiales. New Phytol., 46: 269-273.

Viégas, A. P. (1944). Alguns fungos do Brasil. II. Ascomicetos. Bragantia, 4 (1-6): 17.

Yarwood, C. E. (1957). Powdery mildews. Bot. Rev., 23 (4): 235-300.

ZOBODAT - www.zobodat.at

Zoologisch-Botanische Datenbank/Zoological-Botanical Database

Digitale Literatur/Digital Literature

Zeitschrift/Journal: Sydowia

Jahr/Year: 1969/1970

Band/Volume: 23

Autor(en)/Author(s): Ponnappa K. M.

Artikel/Article: Kokkalera, a new Genus of Erysiphaceae. 4-7