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Physiological and Nutritional Studies on *Colletotrichum gloeosporioides* an Incitant of Mango Anthracnose

In the present study, an attempt was made to know the nitrogen, carbon and sulphur requirements and the suitable temperature and pH requirements for the growth of *Colletotrichum gloeosporioides* in the laboratory. The monosporic culture of *Colletotrichum gloeosporioides* from the infected leaves of mango was obtained in pure culture and maintained on potato dextrose agar slants. Richard's medium was taken as a basal medium since this was reported to be best medium for fungus (Annon., 1970). Adjustment of pH was done by adding 0.1 N NaOH or 0.1 N Hcl. Reaction of the mediums was adjusted to the desired pH of 4.0, 4.5, 5.0, 5.5, 6.0, 6.5, 7.0, 7.5, 8.0, 8.5 and 9.0 by using disodium hydrogen phosphate citric acid buffer, according to schedule of Vogel (1951). The pathogen was subjected to different temperatures range of 15° to 35°C to know optimum temperature for growth. The carbon, nitrogen and sulphur nutrition was studied by replacing the sucrose, potassium nitrate and magnesium sulphate in the basal medium with various carbon, nitrogen and sulphur compounds on molecular weight basis. Thirty ml of the medium dispersed in 150 ml conical flasks were sterlized and inoculated with 5 mm discs from an actively growing zone of 12 day old culture and incubated at 27± 1°C for 12 days. Each treatment was replicated thrice. The culture was filtered through whatman No. 42 filter paper and the dry mycelial weight was recorded after keeping 24 hours in hot air oven maintained at 60°C.

In the present study, the maximum dry mycelial weight was recorded at pH 6.5 (389.00 mg) followed by 6.0 on Richard's solution. The least growth of 84.00 mg noticed at pH 4.00.

Maximum mycelial growth of 371.66 mg was recorded at 26°C followed by 29°C (368.00 mg) and was least at 15°C. This is in agreement with the observations made on *Glomerella cingulata, Colletotrichum capsici* and *Colletotrichum gloeosporioides* (Verma, 1969; Mancini *et al.*, 1973; Rajak, 1983).

The pathogen varied in its ability to utilize different carbon sources. Sucrose was a better carbon source (433.00 mg) among the other carbon sources tested, followed by glucose, maltose and starch. While, citric acid and lactose were least utilized carbon compounds. Sucrose can be generally utilized as a good carbon source by most of the plant pathogenic fungi (Lilly and Barnett, 1951) and similar observations were also made by Nair (1972) and Naik (1985) in case of *Colletotrichum capsici* and *Colletotrichum gloeosporioides,* respectively.

Among the nitrogen sources tested potassium nitrate supported the maximum growth (387.66 mg) followed by sodium nitrate, L-asperagine, ammonium sulphate, urea and ammonium nitrate. The above mentioned all nitrogen sources differed significantly among themselves. Ammonium nitrate was found to be the least utilized source. Similar observation has been made by Rajak (1983) and Naik (1985) in case of *Colletotrichum gloeosporioides.* The nitrate compounds are excellent nitrogen sources for imperfect fungi and also ascomycetes (Bilgrami and Verma, 1978). The poor growth

of 194.33 mg in urea and 175.33 mg in Ammonium nitrate could be because of the fact that the ureas breaks down to ammonia on autoclaving and ammonia in high concentration is toxic to fungi (Cochrane, 1958).

Among the various sulphur sources tried, magnesium sulphate supported the maximum mycelial growth of 426.66 mg which was significantly superior over other compounds. Ferrous sulphate was assimilated with least efficiency and gave 185.00 mg dry mycelial weight of the fungus. Chaturvedi (1965) also obtained the best growth of Collectotrichum gloeosporioides by supplementing magnesium sulphate in the medium.

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Dept, of Plant Pathology,
Agricultural College
Dharwad - 580 005

SURESH EKBOTE
G.M. PADAGANUR
K.H. ANAHOSUR

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