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EFFECT OF DIFFERENT MEDIA ON THE MYCELIAL GROWTH OF *PHYTOPHTHORA COLOCASIAE*

Phytophthora colocasiae causes serious leaf blight disease in colocasia leading to yield loss of 25-50% (Misra, 1996 and 1997). Compared to other *Phytophthora* species, little information is known about the physiology and biology of *P. colocasiae*. Isolation of fungal pathogens from deteriorated tissues is possible only in selected media. Similarly isolation from infected natural soils is difficult due to the preponderance of unwanted and often antagonistic actinomycetes, bacteria and fast growing fungi, which over run in the isolation media. In order to standardise the growth media for undertaking various laboratory studies, the present study was carried out to ascertain the most suitable medium for the growth of *P. colocasiae* in liquid and solid culture and the results are reported in this communication.

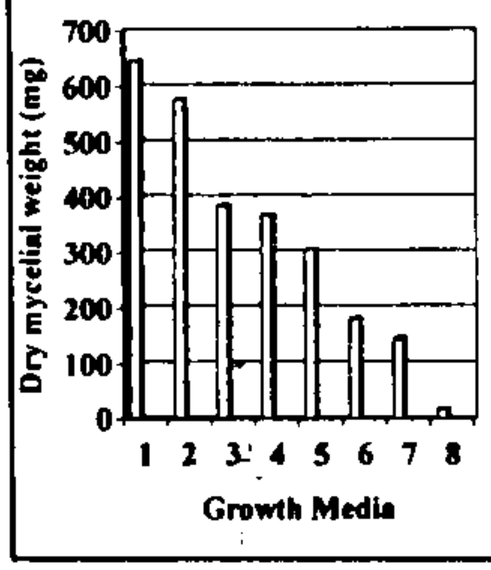
Comparative growth of *P. colocasiae* was evaluated using eight solid and liquid media each. The media tested were Papaya- dextrose medium (Misra and Chowdhury, 1997); Potato-dextrose medium; Czapek-Dox; Rose bengal medium, Host leaf extract medium supplemented with 2% peptone, Sabouraud, Asthana & Hawkers, and Beef Extract (Aneja, 1993). Papaya-dextrose medium was prepared by taking aqueous extract from 400g peeled and boiled raw papaya. The volume was made up to 1000ml with water and 20g dextrose was dissolved in it. For preparing solid media, 20 g Agar-agar was dissolved in 1000 ml of the medium (Misra and Chowdhury, 1997). Likewise, other media were prepared as per the standard procedures (Aneja, 1993).

Seventy-five ml each of different liquid media were taken in 250 ml conical flasks, sterilised and allowed to cool. One cm diameter discs of 10-day-old cultures of *P. colocasiae* were removed from terminal growing points and inoculated in each flask under aseptic conditions. Three replications were maintained for each medium. The flasks were incubated at 24±1°C for 14 days in a B.O.D. incubator. The mycelial mat was filtered using Whatman No.1 filter paper and dried at 50°C in an oven until the dry weight agreed consequently.

In order to assess the growth in solid media, the medium supplemented with agar-agar was plated in sterilised Petri plates under aseptic condition. After solidification, one cm diameter mycelial discs obtained from the growing terminal point of 10-day old *P. colocasiae* culture were placed in the centre of Petri plates containing different solid media. Three replications were maintained for each media. The plates were incubated in the inverted position in a B.O.D. incubator at 24±1°C. The linear growth of the colony was measured at one-day interval starting from 3rd day to 10th day. The experiment was repeated twice to confirm the results.

The results (Fig.1 and 2) revealed that maximum mycelial mass (646.6 mg) in liquid media was obtained

Effect of some liquid media on the mycelial growth of *P.colocasiae*



Effect of some solid growth media on linear growth (mm) of *P.colocasiae*

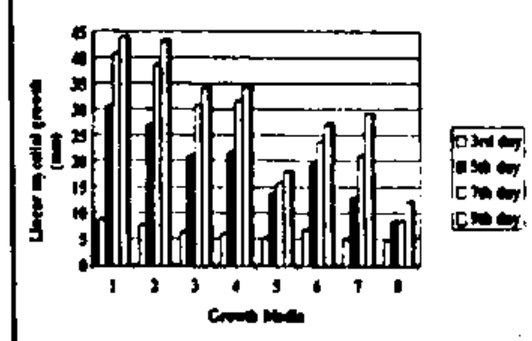


Table 1: **Effect of different nutrient media on the mycelial growth of *P.colocasiae*.**

Sl. No.	Nutrient Media	Linear growth in mm on solid media				Dry mycelial weight(mg) in liquid media*
		3rd day	5th day	7th day	9th day	
1	Papaya-dextrose	9.0	30.8	41.1	44.3	646.6
2	Potato-dextrose	8.0	27.3	39.0	43.6	578.3
3	Sabouraud	6.6	21.2	31.1	34.5	385.0
4	Beef extract	6.3	22.0	32.0	34.6	367.3
5	Host extract	5.5	14.0	16.1	18.3	305.0
6	Czapek-Dox	7.0	19.6	24.0	27.5	181.6
7	Rose bengal	5.3	13.1	21.3	29.5	145.0
8	Asthana and Hawker	5.0	8.6	8.6	12.3	18.3
	CD(5%)	1.33	0.94	2.66	2.66	75.25

• After 14 days of incubation

in papaya-dextrose medium followed by potato-dextrose medium (578.3 mg). Medium growth was noticed in Sabouraud (385mg), beef extract (367.3mg), and host leaf extract supplemented with 2% peptone (305 mg) media. Very poor mycelial growth was recorded in Czapek-dox (181.6mg), Rose bengal (145 mg) and the lowest in Asthana and Hawkers medium (18.3 mg).

The linear mycelial growth on solid media exhibited similar trend as that in liquid media (Table 1). Highest linear mycelial growth was observed in papaya-dextrose agar medium followed by potato-dextrose agar, beef extract and Sabouraud media. Poor growth was observed in host leaf extract medium supplemented with 2% peptone and the lowest being in asthana and hawkers medium.

Potato-dextrose agar has been universally accepted as an ideal medium for most fungi (Aneja, 1993) including a large number of *Phytophthora* species (Masago *et al.*1977; Tsao, 1970). While working on the physiology of *Phytophthora parasitica*, Agarwal (1982) reported potato-dextrose as the best medium for its growth and sporulation. Among different media tried in the present study, papaya-dextrose medium was found to be the best in supporting the growth of *P. colocasiae,* both in liquid as well as solid culture. Our results are in conformity with Misra and Chowdhury (1997), who developed papaya-dextrose medium exclusively for studying the biology and physiology of *P. colocasiae.* The lower growth of *Phytophthora* in rose bengal medium appears to be because of increased toxicity in the medium due to exposure to light (Pady *et al.* 1960) as the antibiotics are easily inactivated by light . Therefore, the media impregnated with antibiotics should be stored or incubated in dark. The present findings indicate that papaya-dextrose medium is ideal for routine culture of *P. colocasiae.*

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