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UTILIZATION OF MONOSACCHARIDES BY FOUR PATHOGENIC SPECIES OF *PHOMOPSIS*

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Amongst 8 monosaccharides, fructose, galactose and glucose were preferentially utilized by the 4 pathogenic species of *Phomopsis*. They, however, consumed these sugars with varying rates.

Keywords: Monosaccharides; *Phomopsis*.

The time taken in utilization of different monosaccharides by various fungi varies considerably (Singh *et al*, 1965; Lal and Tandon, 1968). No such biochemical studies are reported for *Phomopsis* spp. An attempt has, therefore, been made to undertake chromatographic study which will help in understanding the host pathogen relationship.

Single spore cultures of *Phomopsis viticola* Sacc., *P. psidii* Nagraj and Ponnappa, *P. gulabia* Lal and Arya and *P. pedilanthi* Lal and Arya isolated from the diseased fruits of grapes (*Vitis vinifera* L.), guava (*Psidium guajava* L.) from leaves of rose (*Rosa indica* L.) and stems of slipper plant (*Pedilanthus tithymaloides* L.) Poit.), respectively, were employed. The basal medium consisted of KNO_3, 3.5 g; KH_2PO_4, 1.75g; $MgSO_4$. $7H_2O$, 0.75g and distilled water 1000 ml. To this a pentose or hexose was added singly in such a quantity so as to furnish 4 g of carbon per litre. Rest of the technique was similar as described by Lal and Tandon (1968) and Arya and Lal (1985). From each set of the flask 0.005 ml of the medium was analysed every day by circular paper chromatographic technique (Ranjan *et al.*, 1955) Running and spraying reagents were same as described by Buchan and Savage (1952). The fungal mat was harvested on previously dried and weighed Whatman No. 1 filter paper after 5, 10 and 15 days. The pH of the filtrate was also determined. The average dry weight of the mycelial mats was taken as criterian for growth. All the experiments were conducted in triplicate.

Table 1 Average dry weight (mg), groth rate (mg/5 days), final pH and utiliza- *P. pedilanthi* upto 15 days of incubation.

Mono saccharides	Days of incuba-tion	*P. viticola* Dry Wt	Rate of growth	Final pH	Pre-sence (days)	*P. psidii* Dry Wt	Rate of growth	Final pH	Pre-sence (days)
D-xylose	5	63.0	63.0	6.0		68.0	68.0	6.0	
	10	103.0	40.0	7.0	10	117.0	49.0	7.0	11
	15	140.8	37.8	7.0		138.0	21.0	7.0	
D-arabinose	5	33.6	33.6	5.5		23.0	23.0	6.5	
	10	46.6	13.0	5.5	15	37.0	14.0	7.0	15
	15	53.6	7.0	6.0		50.8	13.8	6.5	
L (+) arabinose	5	34.0	34.0	6.0		37.0	37.0	6.0	
	10	58.0	24.0	6.0	13	79.0	42.0	7.0	12
	15	90.0	32.6	7.0		150.2	51.2	7.0	
D-glucose	5	54.2	54.2	6.0		53.6	53.6	6.0	
	10	149.1	95.9	6.0	9	93.3	39.7	6.0	13
	15	136.5	0.0	7.0		159.3	66.0	6.0	
D-fructose	5	33.2	33.2	6.0		22.0	22.0	6.0	
	10	85.6	52.4	6.0	5	68.4	46.4	6.0	7
	15	76.0	0.0	7.0		56.4	0.0	6.0	
D-galactose	5	45.0	45.0	7.0		48.0	48.0	6.0	
	10	129.0	84.0	7.0	6	147.0	99.0	6.5	13
	15	128.0	0.0	7.0		90.0	0.0	7.5	
L-Sorbose	5	11.0	11.0	5.0		8.6	8.6	5.0	
	10	19.8	8.8	5.0	15	28.0	5.0	5.0	15
	15	48.4	28.6	6.0		46.4	18.4	6.0	
D(+)Mannose	5	37.0	37.0	6.0		29 0	29.0	6.0	
	10	69.6	32.6	6.0	11	61.2	32.2	5.5	12
	15	114.8	45.2	5.0		102.0	40.8	7.0	

tion of different monosaccharides by *P. viticola*, *P. psidii*, *P. gulabia* and

P. gulabia				*P. pedilanthi*			
Dry Wt	Rate of growth	Final pH	Pre-sence (days)	Dry Wt	Rate of growth	Final pH	Pre-sence (days)
78.4	78.4	6.0		44.0	44.0	5.5	
137.6	59.2	6.0	5	76.2	32.2	6.5	12
100.4	0.0	6.0		89.0	12.8	7.5	
17.0	17.0	4.0		21.4	21.4	5.0	
35.8	18.8	5.5	15	32.0	10.6	5.0	15
60.4	24.6	5.5		31.0	0.0	5.0	
37.0	37.0	4.5		34.0	34.0	5.5	
55.4	18.4	5.0	15	61.0	27.0	6.0	15
62.0	6.6	5.5		72.0	11.0	6.5	
53.4	53.4	6.5		44.6	44.6	5.5	
121.3	67.9	5.5	12	134.9	90.3	5.0	11
133.3	12.0	6.0		143.2	8.3	5.5	
18.2	18.2	6.0		33.0	33.0	5.0	
56.6	38.4	6.5	9	60.6	27.6	6.0	12
70.6	26.0	6.5		96.5	36.9	6.5	
73.0	7..0	5.5		40.6	40.6	5.5	
114.0	41.0	6.0	11	82.0	41.4	6.0	15
120.0	6.0	7.0		70.0	0.0	6.5	
15.8	15.8	4.5		17.0	17.0	5.0	
29.0	13.2	4.5	15	36.0	19.0	5.0	15
48.0	19.0	5.0		63.6	27.6	5.0	
48.0	48.0	5.5		47.0	47.0	5.5	
114.0	66.0	5.0	14	83.6	36.6	5.0	10
141.7	27.7	6.0		109.6	26.0	7.0	

The dry weight results, final pH and time taken for the utilization of monosacchardies have been summarized in Table 1. It is evident that D-xylose (Rf 0.62) was present in the culture filtrate of *P. viticola* *P. psidii* *P. gulabia* and *P pedilanthi* upto 10 11, 05 and 1 days respectively. *P. vexans* (Chowdhary, 1981) and *P. sapotae* (Rai, 1982) were distinct from above spp. of *Phomopsis* since they failed to consume this pentose within 15 days of incubation. No organism could assimilate D-arabinose (Rf 0.70) completely within 15 days. Presence of L (+) arabinose (Rf 0.70) was recorded upto 12 days in *P. psidii* and 13 days in *P. viticola* like *P. sapotae* (Rai, 1982) other two organisms failed to consume it upto the end of incubation period.

P. viticola utilized D-glucose (Rf 0.60) within 9 days whereas *P. pedilanthi*, *P. gulabia* and *P. psidii* took 11, 12 and 13 days respectively, for this purpose. Rai (1982) working with *P. sapotae* reported its utilization within 8 days. *P. viticola* utilized D-fructose (Rf 0.64) in 5 and D-galactose (Rf 0.60) within 6 days. All the four spp. failed to assimilate L-sorbose (Rf 0 57) within 15 days. *P. pedilanthi* consumed D (+) mannose (Rf 0.58) after 10 days, whereas *P. viticola*, *P. psidii* and *P. gulabia* took 11, 12 and 14 days respectively to assimilate this hexose completely.

It is evident that due to the growth of four organisms in different sugars, pH of the medium became neutral or it shifted towards neutrality at the end of incubation.

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