

EFFECT OF DIFFERENT CARBON COMPOUNDS ON THE
GROWTH AND SPORULATION OF *ALTERNARIA ALTERNATA*
(FR) KEISELER, CAUSING LEAF BLIGHT OF SUNFLOWER

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INTRODUCTION

Carbon is an important constituent of the fungus cells as it forms 50-62 % mycelial dry matter (Lilly & Barnett, 1951). Different forms of carbon sources, viz. mono-, di-, tri- or poly-saccharides, evoke different fungal response—due to improvement of the specific enzymes for their breakdown and uptake—as revealed by the growth and sporulation of the concerned fungus. Some important contributions in this direction have been made by Faro (1971), Johri and Brodie (1972), Ellis *et al.* (1973) and Sahni *et al.* (1975). Studies on different *Alternaria* spp were also carried out by Tandon and Grewal (1954), Singh and Tandon (1966), Gupta *et al.* (1970), Hasija (1970) and Natrajan and Govindarajan (1974).

MATERIALS AND METHODS

The basal medium (control) contained glucose (5 g); potassium nitrate (3.5 g); potassium dihydrogen phosphate (1.75 g); magnesium sulphate (0.75 g) in one litre distilled water. Glucose of this medium was replaced by an equivalent quantity of each of the carbon sources. The amount of polysaccharides was similar to that of glucose adjusted at pH 6 with the help of *N/20* HCl/NaOH. Twenty-five ml of the medium was taken in 150 ml conical flasks in triplicate and sterilized at 15 lb pressure for 20 min. Each flask was inoculated with a 5 mm disc from a 7 days old single spore culture and incubated at $26 \pm 2^\circ\text{C}$ for 10 days. Dry weight of the mycelium, sporulation and final pH were recorded following methods of Chauhan and Suryanarayana (1970) and Singh (1976).

RESULTS

As is evident from Table I, the monosaccharides support better mycelial growth and more sporulation as compared to di- and poly-saccharides. The results are therefore in conformity with those of Bhargava (1971), Sharma (1971), Lal and Tandon (1973) and Agarwal (1975). Disaccharides and polysaccharides on the whole yielded moderate growth, but in terms of sporulation the former showed better results than the latter. Sucrose supported very poor growth but was fairly good source for sporulation. Mannitol provided moderate mycelial growth but induced

very poor sporulation. Similar results were also obtained by Agarwal (1975) with two isolates of *Trichothecium roseum* and Chowdhuri (1975) with *Phomopsis vexans*.

Among carbon sources tested, the monosaccharides are the better source for the growth and sporulation of the fungus.

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TABLE I
Effect of different carbon compounds on growth sporulation of *Alternaria alternata*

Name of Carbon source	Final pH	Sporulation frequency	Biomass (in mg.)
Glucose	7.5	++++	130.2
Fructose	6.8	++++	126.6
Lactose	7.2	++++	76.5
Mannitol	6.3	+	71.4
Maltose	7.0	++++	66.0
Sucrose	7.4	+++	31.8
Starch	6.8	++	58.8
Control (without carbon)	6.0	—	—

+ = Poor; ++ = Moderate; +++ = Good; ++++ = Best

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