

VARIATION IN ANTIBIOTIC POTENCY IN DIFFERENT ISOLATES OF
SCLEROTIUM ROLFSII SACC.

BY

KRISHNA CHAKRABARTI AND NIRMALENDU SAMAJPATI

*Mushroom Research Centre, Mycology Laboratory,
Department of Botany, University of Calcutta, Calcutta-700 019*

Several isolations of *Sclerotium rolfii* were done from different host plants, i. e., cotton seedlings, betelvine, sugarbeet, mesta and jute. All the strains were grown in malt-peptone medium at the same condition and their antibiotic potency were tested against a number of pathogenic bacteria, i. e., *Bacillus subtilis*, *Escherichia coli* and *Staphylococcus aureus*. All the strains showed variation in the capacity of antibiotic production.

INTRODUCTION

Microbial inhibiting activity of *Sclerotium rolfii* was studied by a number of researchers. Basing on the interesting experiment performed by Bose (1953), the present investigation has been undertaken in order to show the variation in the capacity of antibiotic production by the different isolates of same species of *Sclerotium rolfii* from different hosts.

MATERIALS AND METHODS

Several strains of *Sclerotium rolfii* were isolated from different host plants, i. e., cotton seedlings, jute, mesta, sugar beet and different variety of betelvine. Infected jute and mesta were collected from Baruipur Agricultural Farm of Calcutta University, 24-Parganas. Cultures were maintained on potato-dextrose-agar slants at 30°C.

For antibiotic screening, all the strains were grown in malt-peptone medium (David, 1965). 30 ml of medium was taken in each 150 ml Erlenmeyer flask. After sterilization, following the method of Maxwell and Bateman (1968) inoculations were done by sclerotia of respective strains and then incubated at 25°C for fifteen days. After fifteen days of growth, culture filtrates of each strains were obtained by filtrates thus obtained, were concentrated to one-fifth volume under reduced pressure. Antibiotic activity of culture filtrates of all the strains were then tested by 'agar cup method'. On plates containing nutrient peptone agar medium (peptone-0.5%, beef extract-0.3%, glucose-1%, agar-2.5% and PH 7.2) seeded with *Bacillus subtilis*, *Escherichia coli* and *Staphylococcus*

aureus and *Psalmoneella typhii* respectively. After 24 hour incubation at 37°C, the zone of inhibition (mm) was measured.

RESULTS AND DISCUSSIONS

Inhibitory effect of the crude extract of all the strains of *Sclerotium rolfsii* against different bacteria is given in Table 1. As is evident from the data, all the extracts were effective against all the pathogenic bacteria except *Psalmoneella typhii*. The maximum zone of inhibition (35 mm) was shown by the strain isolated from cotton seedlings against *Staphylococcus aureus* and minimum zone was noted by the strain isolated from betelvine var 'Mintha'. On the otherhand maximum zone of inhibition against *Bacillus subtilis* was shown by the strain isolated from 'mesta', although a more or less similar zone was revealed by the strain isolated from jute. Minimum antibiotics activity against *Bacillus subtilis* was revealed by the strain isolated from 'sugarbeet' and betelvine var 'Mintha'. Among the betelvine variety var 'Kali' and 'var Sanchi'

Table 1. Antibacterial activity of the culture filtrates of different isolates of *Sclerotium rolfsii*

Host	Microbes (Zone of inhibition in m. m.)*			
	<i>Bacillns subtilis</i>	<i>Escherichia coli</i>	<i>Staphylococcus aureus</i>	<i>Psalmoneella typhii</i>
Cotton	17	26	35	—
Sugar-beet	16.3	17	23	—
Betel-vine				
var. Sanchi	22	20	21	—
var. Kali	24	21	25	—
var. Mitha	17	15	20	—
Jute	25	21	30	—
Mesta	25.66	19	25	—

*Each value represents an average of five separate determinations

showed more better antibiotic property than 'Mintha' in every case (against *B. subtilis*, *E. coli* and *S. aureus*). The strain isolated from cotton seedlings revealed maximum zone of inhibition against *E. coli* whereas minimum zone was presented by the strain isolated from betelvine var 'Mintha' and sugarbeet. On the whole, strains isolated from cotton seedlings, jute, mesta and betelvine var

'Sanchi' and 'Kali' showed comparatively good inhibition zones than the strains isolated from sugarbeet and betelvine var 'Mintha'. All the strains showed more or less better antistaphylococcus activity than the other test organisms (*B. subtilis* and *E. coli*). The present data revealed that the isolated fungi from different host plants though belongs to the same species under same genus (*Sclerotium rolfsii*) yet each strain (different isolation) showed a great variation in their capacity of antibiotic production. These variation in antibiotic potency of different isolates of same species of *S. rolfsii* might be due to natural mutation as it is evident from the previous paper (Chakrabarti and Samajpati, 1975) the mutated strain $S. r-x_1$ and $S. r-x_2$ prepared from the natural strain isolated from cotton seedlings revealed greater zone of inhibition than the zone produced by natural one, the mother of mutated strains.

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