

EFFECT OF X-RAY ON THE PRODUCTION OF ANTIBIOTICS BY *SCLEROTIUM ROLFSII*

David and Rao (1965) have first reported that *Sclerotium rolfsii* and certain antagonistic bacteria exhibit mutual inhibition on agar plates. Bagyaraj and Sirsi (1965) have shown antibiotic production by *S. rolfsii* which is effective against *Staphylococcus aureus*.

The purpose of this paper is to report the effect of X-rays on the production of antibiotics by *S. rolfsii*.

The test-fungus was isolated from infected cotton seedlings collected from Agricultural Farm of the Calcutta University at Baruipur, 24-Parganas. Cultures were maintained on *potato dextrose agar* slants. Following Beadle and Tatum (1945) by X-ray induction two mutated strains were produced, viz., S.r.-X₁ and S.r.-X₂. For antibiotic screening, these two mutated strains together with natural ones were grown on *malt-sucrose-peptone* medium (Malt extract-20 g., sucrose-20 g., peptone-1 g., distilled water-1 litre, and pH 5.5). 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 15 days. After 15 days of growth, culture filtrates of each strains were obtained by filtering off the fungal mat into a sterile flask. Culture filtrates thus obtained, were concentrated to one-fifth volume under reduced pressure. Antibiotic activity of culture filtrates of three strains were then tested by 'agar cup' method on plates containing *nutrient peptone-agar* medium seeded with (*Escherichia coli* and *Bacillus subtilis*) and also on plates containing *Czapeck agar* medium seeded with *Aspergillus niger*. Production of inhibition zone was noted when fair amount of growth of the organisms was observed in the control plates.

The results obtained during experimental period are given in Table 1.

Table 1. The data (mean) showing the extent of inhibition area during incubation by the concentrated culture filtrate of natural and two mutated strains of *Sclerotium rolfsii*.

Strain. (conc. culture filtrate)	Seeded organism	Zone of inhibition (in m.m.).
Natural	<i>B. subtilis</i>	11.3
"	<i>E. coli</i>	11.66
"	<i>A. niger</i>	—
S.r.-X ₁	<i>B. subtilis</i>	16.3
"	<i>E. coli</i>	22.66
"	<i>A. niger</i>	—
S.r.-X ₂	<i>B. subtilis</i>	14.66
"	<i>E. coli</i>	16.6
"	<i>A. niger</i>	—

The data presented in Table 1 reveal antibacterial property of culture filtrates of all the three strains of *S. rolfsii* whereas they have no antifungal activity as they were unable to control the growth of *A. niger*. Antibacterial property of the test fungus is maximum in the mutated strains than the natural one and between the two mutated strains, X₃ strain posses maximum antibacterial property than X₂ strain. The data also reveal that antibacterial property of both the natural and two mutated strains are most effective against *E. coli* than *B. subtilis*.

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