PRELIMINARY STUDIES ON THE FUNGICIDAL PROPERTIES OF MAKEROL AND SHARIGOL

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IN the course of experiments on the effect of fumigation with Makerol and Sharigol on the germination of seeds it was observed that fumigated seeds gave a significantly higher percentage of germination. This was considered to be possibly due to the fungicidal action of Makerol and Sharigol, and preliminary studies carried out in this direction appear to support this view.

Aspergillus niger and *Alternaria sp.* have been used in this work as test fungi. Two series of tests were performed. In one of them the substance to be tested was mixed with potato dextrose agar medium in varying proportions of 1:1200, 1:600 and 1:400 ; the medium was poured in petri dishes A, B and C respectively, and the petri dishes were then inoculated with spores of the fungus. After inoculation the dishes were kept at room temperature which varied during experimentation from 25°C. to 27°C. Several replicates were done and controls were run with each set of replicates.

Tests with Aspergillus niger

After 24 hours of inoculation in the control, there was considerable growth of mycelium. But in the treated petri dishes there was no growth.

After 48 hours there was a luxuriant growth in the controls and spore formation started. In the experimental petri dish A, treated in the ratio of 1:1200 there was an abnormal stunted and very slight growth of mycelium, Plate I, petri dish A. When studied under microscope the mycelium appeared very closely interwoven and meshed presenting a thick mat-like appearance which thinned out at the edges. A bright yellow pigment also appeared in the mycelium. Petri dishes B and C treated in the ratios of 1:600 and 1:400 showed no growth. Plate II is a microphotograph of the teased mycelium from petri dish A.

Plate I is a photograph of the petri dishes A, B and C and control after 48 hours.

After 72 hours the controls showed a luxuriant growth and the fungus spread all over the medium. In petri dish A there was a further though very slight growth of the mycelium.

Aspergillus niger

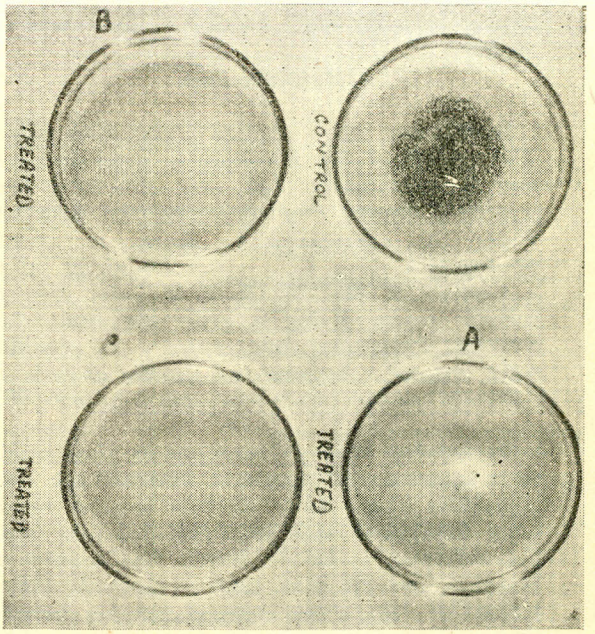

Plate No. 1 *48 Hours growth*

A Sharigol added to the medium in the ratio of 1 : 1200
B Sharigol added to the medium in the ratio of 1 : 600
C Sharigol added to the medium in the ratio of 1 : 400

Aspergillus niger

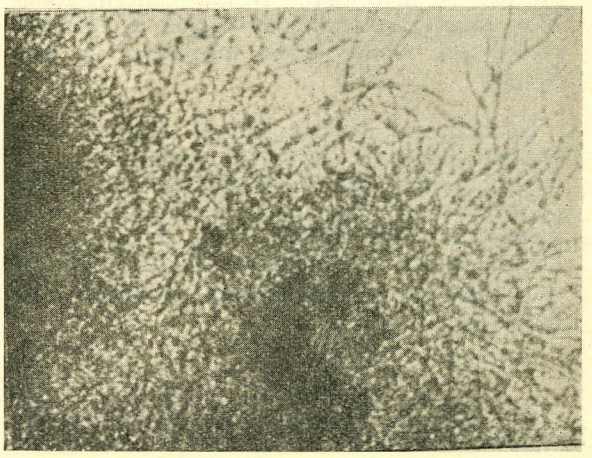

Plate No. II Microphotograph showing abnormal meshed and stunted growth of the mycelium.

There was, however, no spore formation and the yellow pigment became intense yellow. In petri dish B there was a very slight growth of mycelium about the size of a pinhead. In dish C there was no growth.

After a week the growth in the controls progressed normally whereas the growth in dishes A and B stopped, without any spores having been formed. In dish C there was no growth.

Alternaria spp.

In this case also a similar change took place. The growth of the mycelium in petri dishes A and B was stunted and very abnormal presenting a closely meshed interwoven structure under the microscope as shown in microphotograph, plate III. After about 72 hours a portion of the mycelium in petri dish A turned brown giving a gross appearance of conidial formation, but actually no conidia were formed. Seventy-two hours growth is shown in control and in petri dish A in plate IV.

In another series of experiments glass beads were smeared with spores of *Alternaria spp.* and *Aspergillus niger*. Some of these treated beads were fumigated with Sharigol at 1,000 parts per million ; a second batch was soaked in Sharigol and the third kept as control. After treatment these beads were put on potato dextrose agar medium in petri dishes. The spores on the beads which were fumigated and soaked failed to germinate. In the control there was normal growth.

These experiments show that Sharigol and Makerol inhibit the germination of spores and growth of mycelium. In low concentrations they retard and in higher concentrations they completely check spore formation in the fungus.

Spontaneous development of bright yellow pigment has been occasionally reported in the case of *A. niger*, but the production of a yellow pigment under experimental conditions is of interest as there appears to be no earlier reference to this in literature. Further work on the fungicidal activity of these products is in progress.

Alternaria sp.

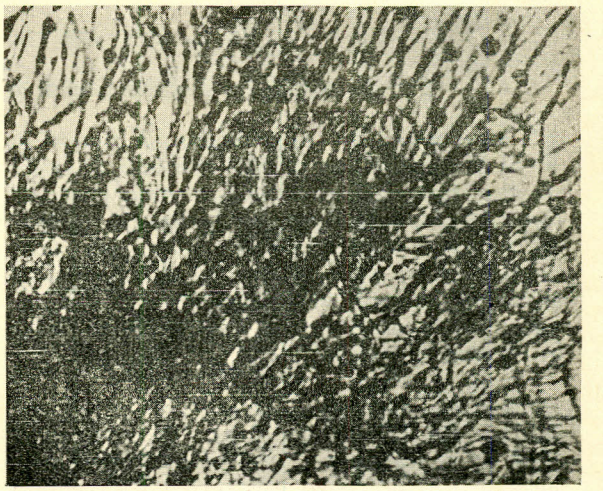

Plate No. III Microphotograph showing meshed and interwoven structure of the mycelium

Alternaria sp.

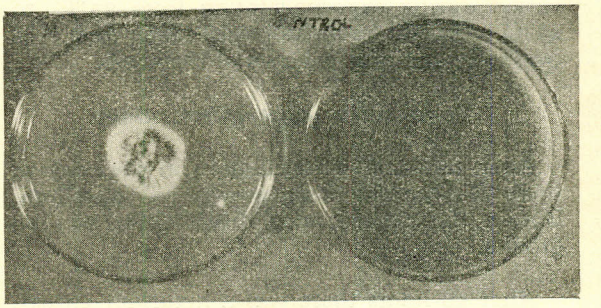

Plate No. IV *72 Hours growth*
A Makerol added to the medium in the ratio of 1 : 1200

Acknowledgement

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