

Termite soil of the dry-evergreen forest and the dipterocarp forest, Sakaerat.

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ABSTRACT

The number of actinomycetes was carried out from Termite soil of the dry-evergreen forest and the dipterocarp forest using the spread plate method. It was found that in the rainy season the population of actinomycetes from dry-evergreen forest soil were higher in number than those from the dipterocarp but the opposite results were obtained in dry season. However the total number of isolates of both forests were still higher also in the rainy season.

All 513 cultures of these actinomycetes isolated by the above study were investigated for their antibiotic producing capabilities at room temperature in 3 different solid media. Among these, 79 – 164 isolates could inhibit the growth of *Escherichia coli*, 15 – 84 isolates could inhibit the growth of *Staphylococcus aureus*, and 10 – 17 isolates could inhibit the growth of *Pseudomonas aeruginosa*. These results also depend upon the types of media used in the investigation and from these study, glucose asparagine agar showed rather efficient production of antibiotic.

Only 26 isolates were selected for further study. The experiments showed that only 15 isolates out of these 26 had the inhibitory effects upon the three cultures of microorganisms being tested.

To study the capability in antibiotic-production at various temperature : 30, 35 and 40 °C, 10 isolates were selected for such tests. The results showed that 9 out of 10 isolates could grow and also produced antimicrobial activities at 30 and 35 °C which all 10 isolates could grow at 40 °C but produced no inhibitory effects at all.

Among 17 isolates which showed highest antibiotic activities, only 4 isolates inhibited the growth of *Pseudomonas aeruginosa*, 2 isolates had the inhibitory effect upon both *Escherichia coli* and *Pseudomonas aeruginosa*, while only 1 isolate inhibited the growth of *Staphylococcus aureus*, and *Pseudomonas aeruginosa*, and the other 10 isolates, produced the antimicrobial effects upon the growth of all three tested cultures. These isolates were then cultivated in liquid medium M₁, M₂, M₃, M₄ for further investigations. The experiments showed that the production of inhibitory

substances in liquid media M_1 , M_2 , and M_3 was nil while M_4 could be used to produce such activities by 2 isolates, TSA 3-217 and TSA 3-489. Only the isolate TSA 3-217 produced the antimicrobial substances capable of inhibiting *Escherichia coli* and *Staphylococcus aureus*.

The culture filtrate of TSA 3-217 was thus tested for its heat stability at 3 different temperature : 50, 70 and 100 °C. The study on its p stability carried out at different p between 1-11. The results showed that antibiotics as produced by the isolated culture TSA 3-217 were found to be stable at the tested temperature and p range for 15 minutes.

The morphological characteristic of TSA 3-217 was similar to those of the *Streptomyces* species.