

## INFLUENCE OF EXTERNAL FACTORS ON THE DEVELOPMENT OF *S. SPINOSA* ON THE LIQUID MEDIUM

Lungu Andrei

*Institute of Genetics, Physiology and Plant Protection,  
Chisinau, Republic of Moldova  
E-mail: [andrei.lungu@igfpp.md](mailto:andrei.lungu@igfpp.md)*

Spinosad is a natural insecticide derived from a species of actinomycete bacterium, *Saccharopolyspora spinosa* (Mertz and Yao 1990), which shows the effectiveness of a synthetic insecticide. It consists of the two most active metabolites, called spinosyn A and D. spinosyns, new macrolides, are natural metabolites produced under aerial fermentation by the actinomycete *Saccharopolyspora spinosa*. These compounds contain a unique system of tetracyclic rings to which two different sugars are attached. These features make spinosad a tool for integrated pest management. The discovery and characterization of *S. spinosa* is a new opportunity a progressive insect management tools in natural products. To obtain these metabolites it is necessary to cultivate in large quantities on liquid media. After the research was initiated, the optimization of the solid nutrient medium was performed in order to maintain the culture, when a uniform development of *S. spinosa* colonies was obtained and a sporulation at 7-10 days, the study of in-depth cultivation on liquid media was studied. Then followed the research of the literature to determine the starting points for the development of the liquid culture medium, several key components were determined. According to literature data, most media had an initial pH of 6.8 when inoculated, the growth was very good and even *S. spinosa* has a good production of spinosad. At the first tests, a very weak growth was determined and the mycelium was not even formed. Likewise, when inoculating samples of cultural liquid on solid media to determine CFU, growth was almost absent and solitary colonies were rarely reported. That is why we went on the path of pH adjustment to weak basic, which led to a rapid and very good growth of *S. spinosa*. After the first negative attempts the cultivation time was also optimized from four days was increased to seven days. Little progress was made in cultivation, but they were insignificant. The cultivation temperature was maintained at 28-30 °C, which allows a good development of the culture on agarized media. After several failed attempts, the idea appeared that maybe the initial amount of inoculum is insufficient and the culture simply fails to develop, in order to verify this hypothesis, the use of the mother culture was used. To obtain this, a 750 ml flask was taken and inoculated with spore suspension, cultured for four days, then the cultural liquid was used as culture. When using this process, a uniform growth was obtained in all repetitions of the same compositions of the environment and also the growth begins very quickly. For an industrial use of *S. spinosa* it is also necessary to study each factor separately but with a higher affinity and to experiment with the composition of the environment to obtain a high productivity and a low price of both the environment and those generated by the process. cultivation.

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