Practice for Bio-organic Chemistry

Syllabus Number 5E233
Basic Major Subjects
Elective Requisites 2 credit

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1. Course Description

1. Cultivation and isolation of actinomycetes derived from soil samples collected from various places in Japan
2. Purification of streptomycin from the fermentation broth of Streptomyces griseus using an ion exchange resin
3. Antibacterial activity against Bacillus subtilis by agar plate diffusion method
4. Extraction of gibberellins and brassinosteroids from plant materials and purification by column chromatography
5. Bioassay methods to determine biological activity of gibberellins and brassinosteroids

2. Course Objectives

Living organisms produce biologically active substances. For example, plants synthesize plant hormones which are involved in regulation of various growth and physiological phenomena in the life cycle. On the other hand, more than just a few microorganisms produce antibiotics, which we utilize as medicines. In this course, biological and chemical methodologies dealing with biologically active substances of plant and microorganism origin will be studied.

3. Grading Policy

Grading will be decided based on reports. To pass, students must earn at least 60 points out of 100.

4. Textbook and Reference

Textbook
A textbook will be distributed.

5. Requirements(Assignments)

Students have to prepare each experiment by reading the distributed textbook and summarizing the content of next experiment in a notebook. This preparation will take 90 min.
After the experiment, students have to write and summarize the results of the experiment in a notebook. This review will take 90 min.

6. Note

7. Schedule

Cultivation and isolation of actinomycetes
Extraction of gibberellins and brassinosteroids
Purification of gibberellins by column chromatography
Purification of brassinosteroids by column chromatography
Observation of actionomycetes
Quantification of streptomycin
Purification of streptomycin using an ion exchange resin
Calculation of antibacterial activity by agar plate diffusion method
Bioassay to determine biological activity of gibberellins and brassinosteroids
Calculation of adsorption and extraction rates of streptomycin
Calculation of biological activity of gibberellins and brassinosteroids