



ЦЕНТЪР ЗА ОБУЧЕНИЕ – БАН

1000 София
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Basic Information:

Course Title: Natural and synthetic plant growth regulators

Lecturer: Prof. Iskren Sergiev, PhD; Assoc. Prof. Dessislava Todorova, PhD

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Total Teaching Hours: 30 (20 h lectures and 10 h practical course)

Annotation (up to 150 words)

The aim of the lecture course is to present current knowledge about the role, distribution and metabolism of the major classes of plant hormones - cytokinins, auxins, gibberellins, abscisic acid, ethylene and the growth regulators polyamines, jasmonates, brassinosteroids, salicylic acid, melatonin, etc. The students will be acquainted with to the variety of synthetic analogues of phytohormones, as well as some possibilities for their application in practice. In the third module of the course, modern methods for determination of endogenous polyamines in plant tissues will be demonstrated.

Course content (brief description by topics or modules)

Topic / Module 1: Natural plant growth regulators.

Topic / Module 2: Synthetic plant growth regulators. Possibilities for practical application.

Topic / Module 3: Practicum - Measurement of polyamine content in plant samples.

Teaching and assessment methods

Hybrid form.

Exam in the form of presentation and discussion on the topic.

Competencies acquired as a result of training (3–5 points)

1. Knowledge of the role and distribution of the classical groups of phytohormones and compounds with hormone-like action.
2. Knowledge of synthetic growth regulators, physiological analogues of phytohormones.
3. Knowledge of the possibilities for the application of growth regulators in practice.
4. Methodological skills for the determination of endogenous polyamines.

Literature:

Munné-Bosch S (2025) Phytohormones revisited: what makes a compound a hormone in plants. Trends in Plant Science, <https://doi.org/10.1016/j.tplants.2025.08.020>.

Haas HU (2019) New Aspects of Plant Regulators. In: Modern Crop Protection Compounds (eds P. Jeschke, M. Witschel, W. Krämer and U. Schirmer). <https://doi.org/10.1002/9783527699261.ch13>

Agudelo-Morales CE, Lerma TA, Martínez JM, Palencia M, Combatt EM (2021) Phytohormones and Plant Growth Regulators - A Review. J. Sci. Technol. Appl., <https://doi.org/10.34294/j.jsta.21.10.66>

Ashtalakshmi M, Saraswathy S, Muthulakshmi S, Venkatesan K, Anitha T (2024) A review on exploring the efficiency of plant hormones on fruitfulness of perishables. Discover Applied Sciences, <https://doi.org/10.1007/s42452-024-06201-9>



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Arnao MB, Hernández-Ruiz J (2019) Melatonin: A New Plant Hormone and/or a Plant Master Regulator? Trends in Plant Science, <https://doi.org/10.1016/j.tplants.2018.10.010>