

СЕКЦІЯ 2. Біологічні науки

THE INFLUENCE OF INDOLEQUINOXALINE, NAPHTHALIMIDE AND BENZOIZATIN ON THE GROWTH OF AGROBACTERIUM TUMEFACIENS

Venger Andrii

*assistant of the microbiology, virology and immunology department
Odessa National Medical University
Odessa, Ukraine*

Kolesnyk Olga

*junior scientific researcher
The Plant Breeding and Genetics Institute –
National Center of Seed and Cultivar Investigation
Odessa, Ukraine*

Zaitsev Andrii

*student
The medical faculty №3
Odessa National Medical University
Odessa, Ukraine*

Shevchuk Ganna

*assistant of the microbiology, virology and immunology department
Odessa National Medical University
Odessa, Ukraine*

Kostov Olexandr

*assistant of the microbiology, virology and immunology department
Odessa National Medical University
Odessa, Ukraine*

Dubina Anghela

*assistant of the microbiology, virology and immunology department
Odessa National Medical University
Odessa, Ukraine*

Abstract. The influence of indolequinoxaline, naphthalimide and benzoizatin on the growth of *Agrobacterium tumefaciens* on selective nutrient media was researched.

Key words: indolequinoxaline, naphthalimide, benzoizatin, *Agrobacterium tumefaciens*, intercalation.

Agrobacterium tumefaciens is gram-negative soil bacteria (Smith & Townsend, Conn), which causes crown gall in plants. This pathogen integrates pathogenic Ti-plasmid into the genome of the plant, which initiates the synthesis of phytohormones that causes excessive cell division and tumor formation. This tumor is destroyed at the low temperatures, which can cause death of plants [1]. Also *A. tumefaciens* can cause conjunctivitis in animals and colonized prostheses [2]. The integration of Ti-plasmid in mouse's genome is shown.

One of the way of profilation of *A. tumefaciens* is intercalation of medicine in Ti-plasmid. Indolequinoxaline, naphthalimide and benzoizatin are structures with high intercalation properties [3]. We have studied the influence of the mentioned substances on *A. tumefaciens* growth in nutrient media.

Materials and methods. Pure cultures of *A. tumefaciens* were sown on the Petro's dish with selective nutrient media, which contained intercalation agents [4]. Each agent was present in media with concentration 1mg/ml, 0.1 mg/ml and 0.01 mg/ml. As control nutrient media without agents was used. Each nutrient media was tested three times. Results were considered according data marks: 0 – the growth of *A. tumefaciens* was more intensive than control; 1– the growth was similar to control; 2 – the growth was less than control but more than half of it; 3 – the growth was less than half of control; 4 – there was no growth of *A. tumefaciens* at all.

Results. Results of research are presented in the table 1.

Table 1. The influence of intercalation agents on the growth of A. tumefaciens

Agents	Concentration	Estimation of <i>A. tumefaciens</i> growth
Indolequinoxaline	1mg/ml	4
	0.1 mg/ml	2
	0.01 mg/ml	2
Naphthalimide	1mg/ml	2
	0.1 mg/ml	1
	0.01 mg/ml	0
Benzoizatin	1mg/ml	4
	0.1 mg/ml	2
	0.01 mg/ml	1

Conclusions. According to results of research the most effective anti-agrobacterial agent is indolequinoxaline, which suppressed agrobacterial growth in each concentration. Indolequinoxaline can be used in the agrobacterial-caused diseases. Naphthalimide and benzoizatin were not so effective.

References:

1. Christie P.J. The Agrobacterium Ti plasmids / P.J. Christie, J.E. Gordon // Microbiol. Spectr. – 2014. – Vol. 2. –P. 1100–1129.
2. Platt T.G. Ecological dynamics and complex interactions of Agrobacterium megaplasmids / T.G. Platt, E.R. Morton, I.S. Barton // Front Plant Sci. – 2014. – Vol. 5. –P. 635–650.
3. Shai D.S. Interferonogenic activity of amixin analogs and diphenyl derivatives / D.S. Shai, N.M. Zholobak, S.A. Liakhov // Mikrobiol Z. . – 2007. – Vol. 69 (5). –P. 59–64.
4. Haas J.M. Universal PCR primers for detection of phytopathogenic rhizobium strains / J.M. Haas, L.W. Moore, W. Ream // Appl. Environ. Microbiol. – 1995. – Vol. 61. – P. 2879–2884.