

## STUDY OF ANTIMICROBIAL ACTIVITY OF PECTIN SUBSTANCES ISOLATED FROM THE ANISE (*PIMPINELLA ANISUM L.*) HERBS

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**Introduction.** Anise (*Pimpinella anisum L.*) is a plant of the Umbrella family (*Apiaceae*), which grows in Turkey, Egypt, Tunisia, Italy and other countries of the world. Fruits are used as medicinal raw materials. They have a lactogenic, carminative effect. The structural components of the plant cell wall are pectin substances. Pectin substances are polysaccharides and have antioxidant, hepatoprotective effects. On the study of the pharmacological activity of polysaccharides of anise fruits, research has already been carried out, but polysaccharides of anise herbs, in particular pectin substances, have not been studied.

**Aim.** Study of the antimicrobial activity of pectin substances isolated from the anise herbs.

**Materials and Methods.** The material of the research was pectin substances isolated from the anise herbs. The antimicrobial activity of pectin substances isolated from the anise herbs was determined by diffusion into agar on a solid nutrient medium by comparing the sizes of the zones of inhibition of the growth of test microbes formed when testing solutions of certain concentrations of the standard sample and the test drug.

For the analysis, sterile Petri dishes of the same diameter with a flat bottom were used.

In cups set on a horizontal table were poured 20 ml of a nutrient medium of a certain composition, infected with an 18-20 hour culture of test strains (*Staphylococcus aureus*, *Escherichia coli*, *Pseudomonas aeruginosa*, *Candida albicans*, *Bacillus subtilis*). For the research, we used the appropriate nutrient media.

Inoculum preparation: pure daily cultures of microorganisms grown on solid nutrient media were used to prepare the inoculum. Several colonies of the same type were selected, clearly isolated.

A small amount of material was transferred with a loop from the tops of the colonies into a test tube with sterile 0,9% NaCl solution, bringing the density of the inoculum to exactly 0,5 according to McFarland's standard. The inoculum was used within 15 minutes after preparation.

Analysis: for testing, 1% and 10% sample solutions were prepared from pectin substances isolated from anise herbs. Wells were made on the solidified agar surface in the center with a glass cylinder. The wells were filled with 1% and 10% solutions at the indicated concentrations in six Petri dishes.

**Incubation:** The dishes were placed in a thermostat at a temperature of  $(36\pm 1)$  °C for 18-24 hours. After incubation in a thermostat, the zones of inhibition of the growth of microorganisms formed by solutions of the compared preparations were measured with a microbiological ruler with an accuracy of 1 mm. The size of the zones was used to assess the microbiological activity of the compared preparations.

**Results and Discussion.** After incubation in a thermostat, the zones of inhibition of the growth of microorganisms formed by 1% and 10% solutions of the sample from pectin substances with a microbiological ruler were measured with an accuracy of 1 mm. According to the size of the zones, the microbiological activity of the studied preparations was assessed (Table 1).

Table 1

Areas of inhibition of the growth of microorganisms under the influence of pectin substances isolated from the anise herbs

Sample	Zones of inhibition of the growth of microorganisms, mm				
	<i>Staphylococcus aureus</i>	<i>Escherichia coli</i>	<i>Pseudomonas aeruginosa</i>	<i>Bacillus subtilis</i>	<i>Candida albicans</i>
1% solution of pectin substances	10,6± 0,5	11,3± 0,5	9,5 ± 0,5	13,3 ± 0,5	9,5 ± 0,5
10% solution of pectin substances	11,3± 0,8	13,5± 0,5	11,5 ± 0,5	17,6 ± 0,5	11,8 ± 0,4

**Conclusions.** Thus, the obtained data show that the pectin substances isolated from the anise herbs have the greatest antimicrobial activity in relation to *Bacillus subtilis*, *Escherichia coli*.

