

## THE ANTIMICROBIAL ACTIVITY OF HONEY KAZAKHSTAN REGIONS

Zh. Khasenbekova, A. Gulayev, A. Akhmetova, Sh.Sergazy, G. Baidildinova,  
A. Kushugulova, S. Kozhakhmetov, M. Urasova, T. Nurgozhin  
*National Laboratory Astana, Nazarbayev University (Astana, Kazakhstan)*  
[zhanagul.khasenbekova@nu.edu.kz](mailto:zhanagul.khasenbekova@nu.edu.kz)

**Key words:** Honey, antimicrobial activity, zone of inhibition, propolis

**Introduction.** Honey is a multi-component solution with antibacterial properties. The antimicrobial activity of honey is associated with the low pH, high osmolality, the presence of hydrogen peroxide, methylglyoxal, the presence of flavonoids.

**Material and methods.** The samples for study the antimicrobial activity were taken from different regions of Kazakhstan. There are monophlore (cotton, sunflower, akkuray, acacia, capers, {*Allium nutans*}) and polyphlore honey (meadow, steppe and mountain herbs), 4 samples of propolis, 2 samples of pollen, royal jelly and homogenate of drone maggots.

For the investigation were used the 10% aqueous solutions of samples. The antimicrobial activity was determined in vitro by the agar diffusion method on solid medium with test-strain {*Staphylococcus aureus*} ATCC 29213. The 100 ul of control/sample was added to each well. Penicillin antibiotic and distilled water were taken as a control. Zones of inhibition of test microbe growth were measured, including the diameter of the well (8 mm).

**Results.** In the experiment, 10% concentration {*Allium nutans*} honey showed the greatest antimicrobial effect among monophlore and polyphlore honey samples, its zone of inhibition were equal to 12,0 mm. Good value were determined for the extract of homogenate of drone maggots (14,2 mm) and royal jelly bees (10,2 mm). High antimicrobial effect were showed by poplar propolis, the diameter of its zone oppressions an average 17,0 mm, which is comparable to the result of control (penicillin-17.3 mm at 1mg/ml concentration). The antimicrobial properties of propolis linked to the presence of flavonoids.

**Conclusion.** Thus, best antimicrobial effect is showed by poplar propolis of all samples.