

## Honey Contamination in the Republic of Kazakhstan

**Authors :** B. Sadepovich Maikanov, Z. Shabanbayevich Adilbekov, R. Husainovna Mustafina, L. Tyulegenovna Auteleyeva

**Abstract :** This study involves detailed information about contaminants of honey in the Republic of Kazakhstan. The requirements of the technical regulation 'Requirements to safety of honey and bee products' and GOST 19792-2001 were taken into account in this research. Contamination of honey by antibiotics was determined by the IEA (immune-enzyme analysis), Ridder analyzer and Tecna produced test systems. Voltammetry (TaLab device) was used to define contamination by salts of heavy metals and gamma-beta spectrometry, 'Progress BG' system, with preliminary ashing of the sample of honey was used to define radioactive contamination. This article pointed out that residues of chloramphenicol were detected in 24% of investigated products, in 22% of them - streptomycin, in 7.3% - sulfanilamide, in 2.4% - tylosin, and in 12% - combined contamination was noted. Geographically, the greatest degree of contamination of honey with antibiotics occurs in the Northern Kazakhstan - 54.4%, and Southern Kazakhstan - 50%, and the lowest in Central and Eastern Kazakhstan with 30% and 25%, respectively. Generally, pollution by heavy metals is within acceptable limits, but the contamination from lead is highest in the Akmola region. The level of radioactive cesium and strontium is also within acceptable concentrations. The highest radioactivity in terms of cesium was observed in the East Kazakhstan region -  $49.00 \pm 10$  Bq/kg, in Akmola, North Kazakhstan and Almaty -  $12.00 \pm 5$ ,  $11.05 \pm 3$  and  $19.0 \pm 8$  Bq/kg, respectively, while the norm is 100 Bq/kg. In terms of strontium, the radioactivity in the East Kazakhstan region is  $25.03 \pm 15$  Bq/kg, while in Akmola, North Kazakhstan and Almaty regions it is  $12.00 \pm 3$ ,  $10.2 \pm 4$  and  $1.0 \pm 2$  Bq/kg, respectively, with the norm of 80 Bq/kg. This accumulation is mainly associated with the environmental degradation, feeding and treating of bees. Moreover, in the process of collecting nectar, external substances can penetrate honey. Overall, this research determines factors and reasons of honey contamination.

**Keywords :** antibiotics, contamination of honey, honey, radionuclides

**Conference Title :** ICFSCM 2017 : International Conference on Food Science, Contamination and Micronutrients

**Conference Location :** Istanbul, Türkiye

**Conference Dates :** July 27-28, 2017