

## QUATERNARY AMMONIUM COMPOUNDS IN PHARMACY

Shapovalenko D.D., Koval'ska O.V.

Scientific supervisor: prof. Blazheyevskiy M. Ye.

National University of Pharmacy, Kharkiv, Ukraine

lena05021985@ukr.net

**Introduction.** The quaternary ammonium compounds (QAC) are widely used in medicine, household and often content in different plant and nature at all. In medicine QAC are widely used as disinfectants. It is used to disinfect patient-care supplies or equipment.

A lot of medicine, based on QAC, are produced Ukrainian and foreign pharmaceutical industry. In addition, a number of insecticides and herbicides content QAC as the main component. There are many cases of poisoning by QAC representative are known.

**Aim.** The aim is the determination the role of QAC in modern pharmaceutical industry.

**Material and methods.** Determination QAC in occupational hygiene and environmental media by liquid chromatography with electrospray ionisation mass spectrometry and tandem mass spectrometry.

**Result and discussion.** Chemically, QAC are organically substituted ammonium compounds in which the nitrogen atom has a valence of four of the substituent radicals (R1-R4) are alkyl or heterocyclic radicals of a given size or chain length, and the fifth is a halide, sulfate or similar radical. Some of QAC used in pharmacy are alkyldimethyl ammonium chloride, alkyldidecyldimethyl ammonium chloride (benzalconium chloride) ("Pharmatex", "Virotec", "Cutasept"). There are new quaternary ammonium compounds (fourth generation), referred to as twin-chain or dialkyl quaternaries (didecyl dimethyl ammonium bromide and dioctyl dimethyl ammonium bromide - "Anginovag", "Decatilen", "Tevalor", "Fluomizin", "Amilar IC", "Decvadol", "Laritilen", "Lizak", "Flumibakt". In total, more than 30 trade names for products are manufactured by pharmaceutical companies around the world.

The bactericidal action of the quaternaries has been attributed to the inactivation of energy-producing enzymes, denaturation of essential cell proteins and disruption of all membrane. The mechanism of biological activity medicine with Benzalconium chloride, Dequalinium chloridum based on its properties. Some quaternary ammonium compounds are used as preservatives in eye drops, ear drops, such as "Optrex", "Apisal". It should be noted that in household derives of QAC are used as insecticides, to fertilize plants, with the aim of their early maturation. It is cause a lot of frequent poisoning. Such distribution of these compounds and an unsafe profile confirms the interest of chemists - analysts in this class of compounds.

**Conclusion.** According to literature data QAC is a very widely used in medicine and pharmacy, has impotent property, that why it is need to produce an alternative method of analysis this class of compound.