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PHARMACEUTICAL COMPATIBILITY INGREDIENTS IN NEW DISINFECTANT EPIDEZ -BARRIER

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A large number of pathogenic microorganisms can over time withstand low temperatures, such as leptospira (*Leptospira*) at minus 30-70 °C can survive up to 2 years. Need sanitization and quarantine measures in the winter decreases but does not disappear. This includes processing equipment, footwear personnel, vehicles, disinfection mats and barriers, and more.

Our task was to pick up a special antifreeze additive to the already known disinfectant "epidez" containing as main active ingredient polyhexamethyleneguanidine, a compound from the group of polymeric guanidine derivatives. PHMG has a broad spectrum bactericidal, virusescidal, algaecidal and fungicidal properties.

However, when making any complex preparations containing two or more ingredients there is a risk of potentially possible chemical interactions. A pharmaceutical ingredients incompatibility is not always possible to determine for obvious signs of chemical reactions (loss of sediment, discoloration, gassing, turbidity, etc.). Therefore, because the selection and testing of antifreeze for epidez MS method we used, in particular, time-of-flight plasma desorption mass spectrometry or TOF-PDMS with sample ionization fission fragments of californium-252.

The new sanitizer "epidez barrier" as antifreeze, we have tested a number of substances that can lower the freezing point of water solutions PHMG. The most optimal composition of carbamide was. The use of carbamide has reduced the onset of crystallization temperature aqueous solution disinfection preparation to minus 16 °C.

Mass spectrometric test compositions containing PHMG chloride with carbamide and carbamide from PHMG maleate showed that these compounds are chemically (pharmaceutical) compatible. In the mass spectrum of PHMG positive ions found in a number of successive peaks of oligomers, which differ by the size of one monomer, $\Delta m / z \approx 141$. This is particularly peaks with m/z 301, 442, 583, 724, 865, 1006. On mass spectrum of a mixture of PHMG with carbamide 12 months and has all the characteristic peaks PHMG oligomers. The nature of the spectrum has not changed. Arguably, the main active ingredient of the drug (PHMG) has not changed, and tumors were found. Thus, our test tracks MS salts PHMG of urea confirmed compatibility pharmaceutical ingredients.

Microbiological tests on test strains *Escherichia coli* and *Staphylococcus aureus* showed that the activity of the new drug PHMG not decreased. Bactericidal effect is already at a concentration of 0.1% for minimum 15 minutes exposure.

As antifreeze us also tested other substances that can reduce the freezing point of water solutions, but they showed worse results.

New disinfectant epidez-barrier successfully tested. It is not chemically aggressive, non-toxic, environmentally friendly, and able to biodecomposition. This is particularly important given the ever-increasing chemical burden on natural ecosystems and agrocenosis. The use of carbamide as antifreeze allowed comparison with analogues significantly reduces the cost of processing. Possible freezing at very low temperatures (below minus 20°C) and subsequent thawing does not affect the quality indicators disinfectant.

Finally, it is worth adding that drugs based on polymeric guanidine derivatives meet "green" chemistry. It is expedient to use when creating agricultural technologies that meet modern environmental standards. For example, PHMG can be used in the production of granular fertilizers, disposable processing 1% solution of the drug sufficient for complete disinfection of contaminated *Salmonella* bird droppings.