Therefore, intensive pig farming leads to significant environmental problems. Thus, a number of pathogenic microorganisms, such as *Salmonella choleraesuis var. typhi*, *Mycoplasma* spp., *Staphylococcus aureus*, *Listeria monocytogenes*, *Streptococcus* spp., *Candida albicans*, *Cryptococcus neoformans*, etc. This emphasizes the need to implement new strategies to improve microclimate conditions by finding and developing biological preparations that contain natural bacteria capable of neutralizing odors and disinfecting livestock premises.

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NEW APPROACHES ON THE STUDY OF ERYTHROCYTE PERMEABILITY TO CRYOPROTECTANTS: EXPERIMENTAL STUDIES AND MODELING OF OSMOTIC SHOCK

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The effective use and development of cryoprotectants is based on the determination of the permeability coefficient (P), which reflects the rate of penetration of substances through the membranes of cells that are frozen. This property of membranes is of considerable interest to both existing and potential new cryoprotectants. In this study, we present a study of the membrane permeability coefficient for bovine, equine, and canine red blood cells for veterinary use.

One of the methods for determining the permeability of membranes to cryoprotectants is to study osmotic shock, in which rolling crenation occurs almost instantly after immersion of red blood cells in a concentrated cryoprotectant solution, followed by slow penetration of the cryoprotectant through the membrane over a period of time, and swelling occurs after subsequent removal of red blood cells and immersion in fresh saline. Hemolysis occurs if the time is long enough for the cryoprotectant to be absorbed in such a quantity that the final osmotically balanced cell volume exceeds the mechanical threshold of the membrane. The data on the percentage of hemolysis as a function of time ultimately yields P as a fitted parameter in the corresponding theoretical model.

Our experiments and simulations lead to three important conclusions. First, it turns out that there is no gap between the experimental facts that the Boyle-van't Hoff plot is well described by an apparent osmotically inactive volume fraction of ~0.5, and that the dry (nonaqueous) volume fraction is ~0.3 [1]. The difference between these two volume fractions has long fueled the belief in a significant amount of osmotically inactive water [2], which has now been proven wrong. Secondly, the initial stage of cranking crenation makes red blood cells more fragile, which correlates with their cranking crenated (reduced) volume [1]. Thirdly, the increased fragility can be corrected for when determining the permeability coefficient of cryoprotectants. We also demonstrate a new approach to the analysis of osmotic shock data, which simultaneously determines both the increased fragility due to initial creniation and the membrane permeability coefficient. A comprehensive bibliographic analysis positions our new analysis in the context of previous literature in the field, and we clearly explain its relevance to the characterization and development of CPA [3].

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OBTAINING ROYAL JELLY BY THE METHOD OF INCOMPLETE (PARTIAL) ORPHANAGE

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Introduction. The development of the beekeeping industry is associated not only with the increase in the production of the main types of products – honey, wax, propolis and bee pollen, but also royal jelly. Royal jelly is collected in apiaries in many countries of the world. This significantly increases the profitability of the industry, especially the one with a weak honey plants base. Royal jelly has high biological activity and exhibits biostimulating, anti-inflammatory, adaptogenic, anesthetic, radioprotective effects and is increasingly used in pharmacy, medical practice, cosmetology, etc [1, 2, 3].

The production of royal jelly is established in many bee farms in different natural and climatic zones of Ukraine. One of the main elements of the technological process of obtaining royal jelly is the presence of the required number of nurse bees in the nest, which is determined by the number of