



# Project Title: (IRN AP09258770) «Development of a Manufacturing Technology for an Inactivated Vaccine Against Camel Pox»

Project Leader: Zhugunisov K.D., PhD

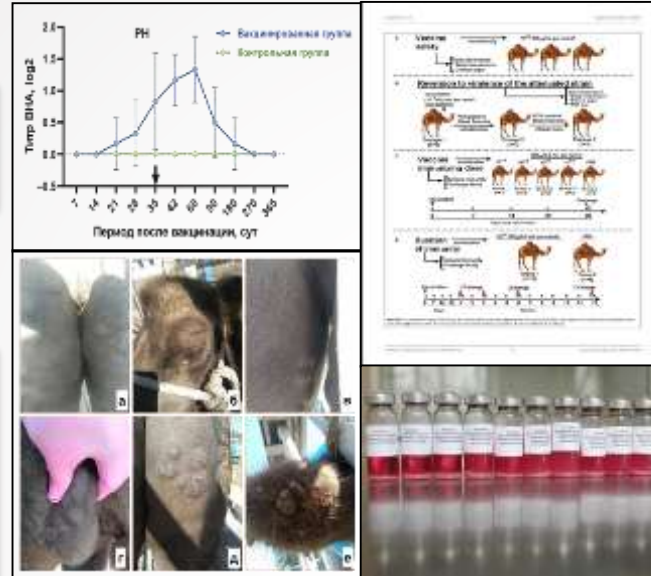


## Purpose of the work

Development of technology for the production of inactivated vaccine against camel pox.

## Results

During the course of the study, an epidemiologically relevant strain was selected for the development of an inactivated vaccine. Cultivation parameters of the virus strain in lamb kidney cell culture were optimized, as well as the virus inactivation protocol using beta-propiolactone. The developed vaccine induced a humoral immune response in animals against the camel pox virus for up to 90 days after the second immunization. However, further analysis of serum samples collected between days 180 and 365 post-vaccination revealed no detectable virus-neutralizing antibodies. Despite the absence of a measurable humoral response, the vaccinated animals remained resistant to challenge with the virulent virus, indicating the presence of robust and long-lasting cellular immunity persisting up to 180 and 365 days post-immunization..



## Tasks

- ✓ Selection of the virus strain for vaccine development;
- ✓ Selection of inactivating agents and determination of optimal virus inactivation parameters;
- ✓ Selection of adjuvants and evaluation of safety and immunostimulatory efficacy within the inactivated vaccine formulation;
- ✓ Assessment of the immunogenic properties of the developed camel pox vaccine;
- ✓ Determination of storage conditions and shelf life of the developed vaccine under various time–temperature regimens;
- ✓ Conducting internal institutional commission testing of the manufacturing technology for the developed inactivated camel pox vaccine.

## List of publications

- Мамбеталиев М., Булатов Е.А., Килибаев С.С., Жугунисов К.Д. Биологические характеристики вируса оспы верблюдов и профилактика /монография// ТОО «Асыл кітап». – 2021. – 216 с. ISBN 978–601–7667–31–3
- Zhugunisov K, Kilibayev S, Mambetaliyev M, Zakarya K, Kassenov M, Abduraimov Y, Bulatov Y, Azanbekova M, Absatova Z, Abeuov K, Nurgaziev R, Renukaradhya GJ, Tabynov K. Development and Evaluation of a Live Attenuated Egg-Based Camelpox Vaccine. *Front Vet Sci*. 2021. doi: 10.3389/fvets.2021.721023. <https://pubmed.ncbi.nlm.nih.gov/34485443/>
- Жугунисов К.Д., Мамбеталиев М.А., Азанбекова М.А., Кенжебаева М.К., Килибаев С.С., Туысканова М.С., Джапашева А.С., Омуртай А.Д., Табыс Ш.Т. Выделение нового штамма М-2020 вируса оспы верблюдов (Poxviridae: Orthoroxvirus: Camelpox virus) в Республике Казахстан и изучение его репродукции на различных биологических системах. *Вопросы вирусологии*. 2022; 67(1): 77-86. DOI:<https://doi.org/10.36233/0507-4088-100> <https://elpub.ru/elpub-article/virusjour/598>
- Sarsenkulova N.A., Tuyskanova M. S., Tabys Sh. T., Hussen J, Zhugunisov K. Development of optimal parameters of inactivation of camel pox virus. *Ғылым және Білім*, Том 1, № 4 (69) 2022, 62-69 стр. <https://ojs.wkai.kz/index.php/gbj/article/view/1063>
- Zhugunisov K, Mambetaliyev M, Sarsenkulova N, Tabys S, Kenzhebaeva M, Issimov A, Abduraimov Y. Development of an Inactivated Camel pox Vaccine from Attenuated Camel pox Virus Strain: Safety and Protection in Camels. *Animals (Basel)*. 2023 Apr 30;13(9):1513. doi: 10.3390/ani13091513. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10177572/>
- Патент на полезную модель №8203, (21) 2023/0054.2, (22) 23.01.2023, (45) 26.01.2024. Способ изготовления вакцины против оспы верблюдов. /Авторы: Абдураимов Е.О., Жугунисов К.Д., Мамбеталиев М., Кенжебаева М.К., Табыс Ш.Т., Сәрсенқұлова Н.А.//