

### **3. Streszczenie i słowa kluczowe w języku angielskim**

Aleutian Disease AD (Aleutian Disease) is a chronic and incurable disease of farmed minks (*Neovison vison*) that causes great losses in modern mink farming. Infected pups from seropositive mothers and adults develop a chronic form of the disease associated with persistent infection with Aleutian mink disease virus (AMDV), leading to permanent carrier and shedding of the virus. Severe immunosuppression caused by persistent AMDV infection increases the susceptibility of mink to secondary bacterial infections, which are often the direct cause of numerous deaths. Due to lack of a vaccine and treatment, supplementation of complementary feeds and anti-epizootic measures are ineffective, there is a need to prepare strategies to minimize breeding losses due to the Aleutian Disease. One of the alternatives is to select and breeding of minks with an efficient immune system, i.e. animals with a low titre of anti-AMDV antibodies, minimal anatomopathological lesions, small amount of virus-antibody immune complexes and a longer survival time. The search of immunological parameters for that can be base for selection of minks resistant to Aleutian Disease is the subject of this doctoral thesis.

The studies were carried out in a mink farm with a stock of 47,000 females of the primary herd. The hematological and biochemical blood parameters, immune response profile, number of virus copies (qPCR), SNP polymorphism of sequences coding structural proteins VP1 and VP2 and non-structural protein NS of AMD virus were determined. Moreover, correlations between the level of anti-AMDV antibodies, and the number of virus copies in individual study groups and genetic variants of SNP mutations were found. In ELISA, minks with a chronic form of Aleutian Disease differ in the level of anti-AMDV antibodies. Selection of minks tolerant to the disease could be achieved on the basis of results of ELISA. Minks with of various titers in the ELISA differ in the size of biochemical parameters that are responsible for multi-organ inflammatory changes and the number of AMDV copies. In mink flocks with an identified strain of AMD virus of medium virulence, there is a selection pressure towards reduced susceptibility to the disease, which enables the selection of appropriate immunological, biochemical and blood count parameters useful for selecting minks for further breeding. Differences between the severity of the lesions and the character of the immune profiles may also be the basis for selecting minks for increased tolerance to Aleutian disease. The usefulness of immunological profiles for selection is indicated, among others, by presence of the monocyte phagotest in most regression models relating to the prediction of optical density (OD) values in the ELISA and QTY in the qPCR assays. The selection of morphological and biochemical parameters enables commercial monitoring of mink selection progress towards increasing tolerance to the Aleutian Disease. Determination of the level of leukocytes, erythrocytes and

the percentage of hemoglobin in peripheral blood can also be used to monitor the progress of mink selection towards increasing tolerance to the Aleutian disease. The classification process of regression models based solely on the coefficient of determination or  $C(p)$  does not perform a predictive role. Developing multiple regression equations may limit the number of features relevant to the study in the context of increased Aleutian disease virus copy number.

**Keywords:** immunosuppression, ELISA, Aleutian mink disease virus (AMDV), qPCR