EFFECT OF TRANSPORT ON RABBITS WELFARE: SERUM LYSOZYME DETERMINATION

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INTRODUCTION and AIM

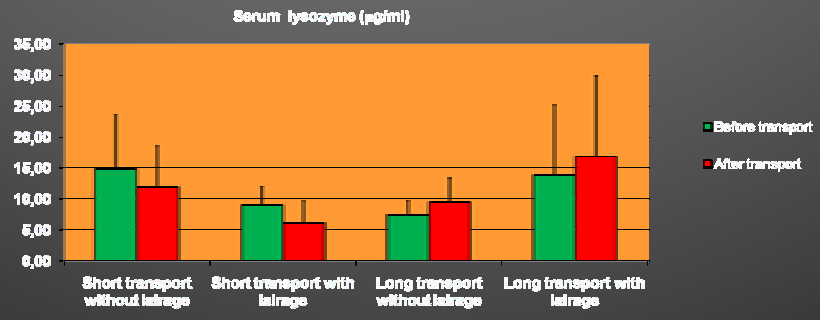
The aim of this study was to determine the influence of transport on serum lysozyme concentration. Lysozyme (mucopeptidase) is considered as a component of the earlier innate protective mechanisms, and is active mainly against Gram-positive bacteria but it can also be active against *E. coli* and other Gram-negative bacteria. Studies of the stress influence on lysozyme concentration are scarce. How stress modifies the innate immunity and particularly lysozyme concentration has not been explored in rabbits.

MATERIALS and METHODS

In this trial the effects exerted on welfare by different times of journey (1 *vs* 3 hours) and lairage (0 *vs* 5 hours) were tested on 70 rabbits. Two blood samples have been taken before and after the animal transport and lairage. Lysozyme concentration was determinated using a micromethod assay set up at DIPAV (Microbiology and Immunology Unit) starting from Osserman's lysoplate method. Briefly, 50 ml of 1% low electroendosmosis and sulfate content agarose (IBI Shelthon Scientific) dissolved in phosphate buffer (0.066M Na_2HPO_4 and NaH_2PO_4, pH=6.6) was mixed with a suspension of *Micrococcus lysodeikticus* cell walls (Sigma). This mixture was poured out in Petri's dish (150 mm diameter). After solidifying at room temperature 32 wells were made (3mm diameter). Ten microliters of diluted sera were poured out in each well in duplicate. Six standard dilutions (from 20 to 0.625 µg/ml) of chicken egg white lysozyme (Sigma) were used in the same quantity as well. After incubation of the plates at 24°C for 18h, the diameter of the cleared zone of lysis were measured with a special ruler. Exponential standard curves from the size of the cleared zones of the lysozyme standard solutions, from which the lysozyme concentration in the unknowns was estimated, were employed.

RESULTS and DISCUSSION

In short transport without lairage (14.7±8.8 *vs* 11.8±6.6 µg/ml) and short transport with lairage (8.9±3.0 *vs* 6.0±3.6 µg/ml) groups, a decrease of lysozyme activity was observed after transport, whereas in long transport without lairage (7.4±2.3 *vs* 9.4±3.9 µg/ml and long transport with lairage (13.7±11.3 *vs* 16.8±13.0 µg/ml) groups, a progressive increased activity after transport was noticed from initial values.



Probably transport leads to changes in neuroendocrine and immune system-derived substances, which influence the innate immune factors, but a detailed explanation of these mechanisms needs some additional studies. However, the potential effects of stress on lysozyme activity are highly controversial since in other animal species some researchers have reported increases of this marker after stress induced by isolation and trauma, whereas others a decrease after immobilization stress.