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Can enterocins affect phagocytosis and glutathione-peroxidase in rabbits?

Rapid Communication

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Abstract: The gastrointestinal microbiota in rabbits play an important role in protection against potential pathogens *via* the development of the mucosal immune system. The gut health, including the microbial and immunological stability, is often influenced by exogenous factors, mainly around the weaning period. Therefore, alternative strategies are required to improve the animal's health. In this study, the diet of rabbits was supplemented with the semi-purified enterocins *Ent* 2019, *Ent* M and *Ent* 4231, produced by bacteriocinogenic strains with probiotic properties, rabbit-derived *Enterococcus faecium* CCM7420 and non rabbit-derived *E. faecium* strains AL41 and CCM4231. The phagocytic activity, index of phagocytic activity and the gluthatione-peroxidase enzyme activity in blood were determined during the *Ents* consumption and also 3 weeks after their cessation. At 21 days into the experiment the highest phagocytic activity was observed in rabbits receiving *Ent* M. A significant increase in phagocytosis was noted in rabbits with *Ent* 2019 over the entire experiment. Moreover, a lower gluthatione-peroxidase activity was measured in rabbits receiving *Ent* M and *Ent* 2019. No effect of *Ent* 4231 application on the tested parameters was recorded. The *Ent* M and *Ent* 2019 improved the digestive immunity and the host's defense capacities by stimulating leucocyte phagocytosis, without oxidative stress induction in rabbits.

Keywords: Bacteriocins • Blood • Phagocytic activity

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1. Introduction

Knowledge of the immune response and homeostasis in farm animals is important to protect animals from diseases (especially bacterial diseases) and/or to improve the health and/or productivity of animals which are bred for consumption - "food animals". In broiler rabbits, the overall organisation of the digestive immune - lymphoid system is similar to that of other mammalian species with the exception of two additional structures: the sacculus rotundus and the vermiform apendix. These have been identified only in this species and generally act synergistically [1]. The vermiform appendix is an additional place of lymphoid cell differentiation and maturation. Other primary lymphoid organs are the bone marrow, thymus, foetal liver. After differentiation and migration to the secondary lymphoid organs – spleen, lymph nodes, gut associated lymphoid tissues (GALT) - the lymphoid cells are stimulated and proliferated [2]. Several studies have reviewed the effects of therapeutical agents, both synthetic and natural, on the general immune response in humans and animals [3,4]. However, only a few studies have been published concerning the influence of natural substances – probiotics, prebiotics, plant extracts, and bacteriocins- on the immune profile of rabbits [5,6].

There is also an interaction between gut microflora and health status of the host organism. Microbiota protect against pathogens as a constituent of the intestine's defense barrier and are also implicated in the development and maturation of the digestive mucosal

