



Master's degree thesis

Impact of diet in morphometric and immune maternal factors of Lewis rats during Pregnancy and Lactation



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ABSTRACT

Early-life infants, possess an immature immune system, which could make them be more susceptible to infection. To allow immune maturation, maternal factors like immunoglobulins or anti-inflammatory cytokines transferred through the placenta and the breast milk, do play a crucial role, but it also does maternal nutrition, as some nutrients that are transferred also to the offspring, have a direct impact in immune features like thymus development or mucosal integrity, and also in features none closely related to the immune system, but related to overall health, like birth weight or neurological development. Therefore, it seems that maternal nutrition has a very important effect on new-born's health, but it should also have an effect over mothers that could be noticed. Therefore, the objective of this thesis is to check how two types of diet, one with components linked to healthy effects, and one with components linked with harmful effects, can impact maternal features like morphology, immunology and metabolic waste products like the faeces. To assess differences, body weight, food and water consumption, and faeces pH and humidity has been tracked all along gestation and lactation in Lewis rats that consumed either the healthy diet, or the unhealthy or the reference one. Moreover, a haematological analysis, an IgA determination and organs' weight determination have been performed. After the study, what it has been seen is that indeed, healthy diet provides beneficial effects like increased caecum and small intestine weight as well as an increased body weight compared to the reference diet during gestation, and the unhealthy diet provides harmful effects like alkaline faeces or unhealthy body weight gain. Therefore, this thesis shows that diet has an important role in health from both the offspring and the mother and provides a useful tool for disease prognosis of the progeny, which is maternal parameters assessment.

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