

Liver enzymes activities, as Gama-GT, Aspartate Transaminase and Alanine Transaminase, were modulated in tumour-bearing rats subjected to early development and weaning periods under leucine and/or omega-3 supplementation.

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Abstract

Cancer is one of the leading cause of death, being the cachexia state responsible for 25% of deaths. We evaluated the efficiency of nutritional supplementation with leucine and/or omega-3 fatty acid on preventing or minimising the damages caused by Walker-256 carcinoma growth in adult rats from mothers subjected to these dietary schemes during the pregnancy and weaning period. The main proposal was to study the possible epigenetics effects in hepatic tissue, analysing the liver enzymes activities, which confirmed that this supplementation could reduce the metabolic liver impairment.

Key words: Cancer-cachexia, nutritional supplementation, liver enzymes.

Introduction

Cancer is the second cause of death in the world, overloading the host tissues. Decreased anabolism and hypercatabolic processes characterize cancer-cachexia in patients and also in experimental animal models. Meanwhile, the nutritional supplementation can be a co-adjuvant alternative to preserve or revert the cachectic state. Knowing that leucine has a signaling cellular property, and omega-3 fatty acid improves the host immune response, this work evaluated the efficiency of nutritional supplementation during pregnancy and weaning period on preventing or modulating the effects caused by Walker-256 carcinoma growth in adult rats, accessing their liver enzymes activity.

Results and Discussion

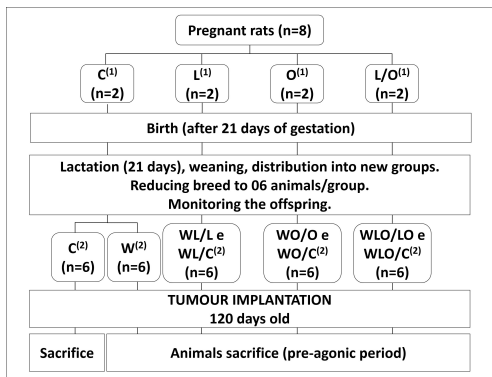


Image 1: Experimental procedure. After breeding, pregnant rats and their offspring were subjected to leucine and/or omega-3 rich-diets, during weaning or until adulthood. Adult males received an implant of 2×10^6 Walker-256 tumour viable cells in right subcutaneous. (2) Total of animals per group (n=6 males).

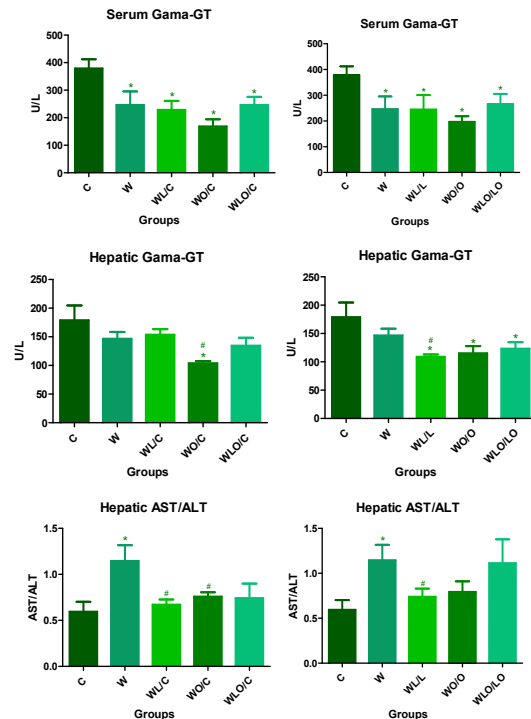
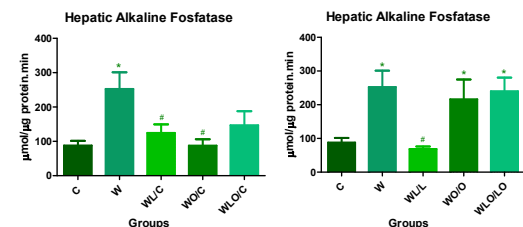


Image 2. Hepatic enzymes activities. Samples were analyzed in serum and hepatic tissue (* $p \leq 0.05$ statistical difference against C; # $p \leq 0.05$ statistical difference against W).



Conclusions

Taking these results together, we conclude that leucine and/or omega-3 supplementation was efficient in reducing liver overloading and spoliation, once hepatic enzymes activities and AST/ALT ratio are decreased. Therefore, this supplementation could be a good prevention strategy against metabolic liver impairment during cancer-cachexia state.

Acknowledgement

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¹ Tisdale MJ. Cachexia in Cancer Patients. Nature Reviews Cancer 2 Nov. 2002, 862-871