

Molecular basis of anti-inflammatory strategies in cancer cachexia

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Cancer cachexia is a paraneoplastic syndrome affecting the large majority of terminally ill cancer patients and is clinically characterized by a number of symptoms which are not overcome by standard nutritional supplementation or by pharmacological therapy. L-Carnitine has been tested in preliminary studies in human cachexia, resulting in improved fatigue and quality of life. Our results show that in experimental cachexia the marked alterations of lipid metabolism are suppressed by L-carnitine supplementation, and associated with increased survival. The anti-inflammatory effects of L-carnitine supplementation seem to be similar to those elicited by chronic physical exercise in cachectic animals and patients. We have shown that the expression of lipid metabolism-related proteins is restored to normal levels in the liver and muscle after exercise training, re-establishing cellular function. These results are associated with decreased local and systemic inflammation, to which the white adipose tissue markedly contributes in cachexia. The molecular basis of the effects of L-carnitine supplementation and of exercise training upon cancer cachexia, with special focus on the relevance of white adipose tissue, will be examined.