

***Omega-3 and omega-3/curcumin-enriched fruit juices decrease tumour growth and improve muscle wasting in tumour-bearing mice.***

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**Background and aims:** The aim of the present investigation is to evaluate the effects of a juice containing essential nutrients (marine omega-3 fatty acids (EPA and DHA), a polyphenol rich juice, vitamin D3, essential amino acids and dietary fibre) (CAX) and one juice enriched also with curcumin (CUR) alone or in combination with a chemotherapeutic agent (*sorafenib*) in a mouse cancer cachexia model.

**Methods:** Administration of CAX and CUR in the form of jellified pellets to mice bearing the Lewis lung carcinoma resulted in a 12 and 18% reduction in tumour weight, respectively.

**Results:** Interestingly, the CAX administration alone did not influence metastasis but in combination with chemotherapeutic treatment it decreased the weight of metastasis together with the percentage of damaged lung. In spite of the tumour reduction, the chemotherapy treatment alone did not result in changes in body weight. Conversely, in combination with sorafenib, both juices had an important effect on body weight loss. CUR also had an effect without chemotherapy. Concerning muscle weights, soleus mass was increased as a result of CUR treatment. Sorafenib-treated mice had tendency to show larger *soleus* muscles, this tendency being clearly significant when CAX was administered in combination with chemotherapy. A very clear statistically significant increase was observed in *tibialis* muscle when the animals were treated with either CAX or CUR. In combination with sorafenib, CAX treatment also resulted in larger *tibialis* muscles. In sorafenib-treated mice, juice treatment --either CAX or CUR-- resulted in a significant increase in grip force. In addition, administration of either CAX or CUR had a beneficial effect on the hematocrit in mice submitted to chemotherapeutic treatment.

**Conclusions:** It is concluded that administration of omega-3 and omega-3/curcumin-enriched fruit juices may have beneficial effects on muscle wasting and could be part of a multi-modal therapy for cancer cachexia.