Rationale For α-Lipoic acid (ALA) and CoQ10 as an Adjunct Therapy of Obesity

α-Lipoic acid

ALA has a positive effect on the fat metabolism.

ALA increases HDL-cholesterol in fat fed hamsters. This shows that ALA has a positive effect on the fat metabolism (1).

ALA enhances satiety resulting in a reduced food intake.

This could be shown impressively in a study conducted in 2004, published in Nature Medicine (2).

ALA has further positive effects which are particularly beneficial for overweight people.

ALA inhibits the secretion of insulin through a direct effect on the beta-cells (3). This results in a less pronounced drop of the glucose level after a meal, hence in a reduction of the postprandial hypoglycemia. The consequence is less hunger in between.

In addition, ALA increases the oxidation of pyruvate and, in turn, inhibits the oxidation of free fatty acids (4). This is particularly beneficial for diabetics. Especially this group of patients has a health benefit from ALA because diabetes is often associated with obesity.

Coenzyme Q10

CoQ10 supports fat burning

CoQ10 levels in the adipose tissue of overweight people are significantly lower than in people with a normal body weight (5). This, however, means that the fat oxidation is diminished and the food is utilized more efficiently by the body. Less heat is generated and more substrate is stored. Genetically overweight patients (Prater Willi Syndrome) are, therefore, recommended to take CoQ10 for weight reduction (5).

Combination of ALA and CoQ10

The rationale of a combination of both substances comes from studies on patients with mitochondrial disorders. In these conditions the utilization of energy is disturbed which leads to muscle damages and metabolic disturbances. As a consequence those patients have a higher adipose mass with a concurrent lower lean (muscle) mass. In patients with mitochondrial disorders who were

given a combination of ALA and CoQ10, the proportion of body fat could significantly be reduced whilst the lean body mass was increased (6). Likewise it could be shown that the mitochondrial ATP-production could be enhanced by CoQ10 (7). This means that the observed reduction of adipose mass can be explained by an increased generation of energy from the oxidation of fatty acids. At the same time ALA, a very potent antioxidant, scavenges the detrimental Reactive Oxygen Species (ROS), which are formed during the oxidation of fatty acids (8). This reduces the chronic inflammations, caused by ROS and often found in obese people (9).

Combining an antioxidant, e.g. vitamin E, with CoQ10, enhances its positive effect on the ROS formation and the chronic inflammations significantly (10). This means, the authors conclude, that particularly vascular diseases, which often occur in obese patients, could be reduced by the combination of ALA and Co Q10. A study with patients suffering from metabolic syndrome and obesity, showed indeed that ALA could reduce inflammation markers (11).

Conclusion:

A combination of ALA and CoQ10 has the following benefits:

- It supports the reduction of adipose mass
- It harmonizes the metabolic utilization of energy and glucose
- It reduces the detrimental Reactive Oxygen Species (ROS) and inflammation markers, and hence the risks of obesity related diseases

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