

Conjugated linoleic acid (CLA) stimulates mitochondrial biogenesis by PGC-1alpha in trained mice

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Conjugated linoleic acid (CLA) has been reported to improve muscle hypertrophy, steroidogenesis, physical activity and endurance capacity in mice (1,2), however the mode of action is not completely understood. The aims of the present study were to identify the pathway stimulated by CLA supplementation on mitochondrial biogenesis, one of the most important adaptive response in skeletal muscle after endurance exercise. Mice were randomly assigned to one of four groups (n = 8 per group): placebo sedentary (PLA-SED); CLA sedentary (CLA-SED); placebo trained (PLA-TR); or CLA trained (CLA-TR). The CLA groups were gavaged with 35 μ L per day (corresponding to the 0.5% of food ingested, approximately 4 g) Tonalin® FFA 80 food supplement containing CLA throughout the 6 week experimental period, while the placebo groups were gavaged with 35 μ L per day sunflower oil. Trained groups performed progressive running on the rotarod for 6 weeks at increasing speed and duration (3). Preliminary findings may suggest that CLA supplementation potentiate mitochondrial biogenesis in trained skeletal muscle via PGC-1 alpha, although further studies need to be conducted to delineate the signaling cascade.

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References

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Keywords

Skeletal muscle; mitochondrial biogenesis; food supplements; exercise.