Randomized Controlled Trial > Free Radic Res. 2019 Aug;53(8):901-909.

doi: 10.1080/10715762.2019.1645955. Epub 2019 Aug 7.

Coenzyme Q10 supplementation alleviates pain in pregabalin-treated fibromyalgia patients *via* reducing brain activity and mitochondrial dysfunction

Passakorn Sawaddiruk [1 2 3], Nattayaporn Apaijai [1 2], Sahattaya Paiboonworachat [3], Tawika Kaewchur [4], Nuntana Kasitanon [5], Thidarat Jaiwongkam [1 2], Sasiwan Kerdphoo [1 2], Nipon Chattipakorn [1 2 6], Siriporn C Chattipakorn [1 2 7]

Affiliations

PMID: 31387429 DOI: 10.1080/10715762.2019.1645955

Abstract

Although coenzyme Q10 (CoQ10) supplementation has shown to reduce pain levels in chronic pain, the effects of CoQ10 supplementation on pain, anxiety, brain activity, mitochondrial oxidative stress, antioxidants, and inflammation in pregabalin-treated fibromyalgia (FM) patients have not clearly elucidated. We hypothesised that CoQ10 supplementation reduced pain better than pregabalin alone *via* reducing brain activity, mitochondrial oxidative stress, inflammation, and increasing antioxidant levels in pregabalin-treated FM patients. A double-blind randomised placebo-controlled trial was conducted. Eleven FM patients were enrolled with 2 weeks wash-out then randomly allocated to 2 treatment groups; pregabalin with CoQ10 or pregabalin with placebo for 40 d. Then, patients in CoQ10 group were switched to placebo, and patients in placebo group were switched to CoQ10 for another 40 d. Pain pressure threshold (PPT), FM questionnaire, anxiety, and pain score were examined. Peripheral blood mononuclear cells (PBMCs) were isolated to investigate mitochondrial oxidative stress and inflammation at day 0, 40, and 80. The level of antioxidants and brain positron emission tomography (PET) scan were also determined at these time points. Pregabalin alone reduced pain and anxiety *via* decreasing brain activity compared with their baseline. However, it did not affect mitochondrial oxidative stress and inflammation. Supplementation with CoQ10 effectively reduced greater pain, anxiety and brain activity, mitochondrial oxidative stress, and inflammation. CoQ10 also increased a reduced glutathione levels and superoxide dismutase (SOD) levels in FM patients. These findings provide new evidence that CoQ10 supplementation provides further benefit for relieving pain sensation in pregabalin-treated FM patients, possibly *via* improving mitochondrial function, reducing inflammation, and decreasing brain activity.

Keywords: Brain activity; coenzyme Q10; fibromyalgia; oxidative stress; pain; pregabalin.

Related information

MedGen
PubChem Compound (MeSH Keyword)

LinkOut – more resources

Full Text Sources
Taylor & Francis

Medical
Genetic Alliance
MedlinePlus Health Information