Coenzyme Q10 Prevented Full Blown Splenomegaly and Decreased Melarsoprol-Induced Reactive Encephalopathy in Mice Infected with Trypanosoma Brucei Rhodesiense.

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Abstract

Objective: To establish the modulatory effects of coenzyme Q_{10} on experimental trypanosome infections in mice and evaluate the risk of occurrence and severity of melarsoprol-induced post treatment reactive encephalopathy (PTRE).
Methods: Female Swiss white mice were orally administered with 200 mg/kg of coenzyme Q_{10} after which they were intraperitoneally inoculated with *Tryponasoma brucei rhodesiense* (*T. b. rhodesiense*). The resultant infection was allowed to develop and simulate all phases of human African tryponasomiasis and PTRE. Parasitaemia development, packed cell volume, haematological and pathological changes were determined.
Results: A histological study in the brain tissue of *T. b. rhodesiense* infected mice demonstrated neuroinflamatory pathology which was highly amplified in the PTRE-induced groups. A prominent reduction in the severity of the neuroinflammaory response was detected when coenxyme-Q_{10} was administered. Furthermore, the mean tissue weight of spleen to body ratio in coenxyme-Q_{10} was supplemented group was significantly (P<0.05) different compared to un-supplemented groups, and clearly indicated that coenzyme Q_{10} prevented full blown splenomegaly pathogenesis by *T.b.* rhodesiense. A significant (P<0.05) increase in hemoglobin levels and red blood cells was observed in coenzyme Q_{10} mice compared to those infected and un-supplemented with coenzyme Q_{10}.
Conclusions: The capacity of coenzyme Q_{10} to alter the pathogenesis of *T.b. rhodesiense* infection in mice and following treatment with melarsoprol, may find application by rendering humans and animals less susceptible to deleterious effects of trypanosome infection such as splenomegaly and melarsoprol-induced PTRE and neurotoxicity.

Keywords: *Trypanasoma brucei rhodesiense*, Encephalopathy, Coenzyme Q_{10}, Melarsoprol, Post treatment reactive encephalopathy, Splenomegaly.

Journal of Coastal Life Machine Vol. 2 pp, 230 – 238. (2014).

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