

Effects of Quercetin and α -Lipoic Acid on Acetylcholine Esterase and Paraoxonase Activities in α -Cypermethrin Treated Rats

[Solomon Rotimi](#)

,

[Bababode Adelani](#)

, and

[Oluwakemi Rotimi](#)

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Abstract

This study evaluated the effects of quercetin and α -lipoic acid on the activities of acetylcholine esterase and paraoxonase in α -Cypermethrin treated rats. 30 rats were randomly divided into five experimental groups thus: (i) control group, (ii) α -CYP alone (14.5 mg kg⁻¹ body weight/day), (iii) α -CYP (14.5 mg kg⁻¹ body weight/day) and α -lipoic acid (20 mg kg⁻¹ body weight/day) 1h later, (iv) α -CYP (14.5 mg kg⁻¹ body weight/day) and quercetin (20 mg kg⁻¹ body weight/day) 1h later (v) α -lipoic acid alone (vi) quercetin alone. After two weeks of treatment, the rats were sacrificed and blood collected by cardiac puncture and organs were excised for the assay of the activities of the enzymes. Arylesterase (AREase) activity was assayed in plasma, HDL₁, HDL₃, kidney, liver and brain while paraoxonase (PON) activity was assayed in plasma, HDL₁ and HDL₃ while acetylcholine esterase (AChE) activity was assayed in erythrocyte. α -CYP treatment resulted in a significant ($p < 0.05$) increase in the activity of erythrocyte AChE activity and both α -lipoic acid and quercetin significantly ($p < 0.05$) reduced this increase. There was a significant ($p < 0.05$) decrease in AREase activity in both HDL₁ and brain in α -CYP treated groups. Treatment with α -lipoic acid significantly ($p < 0.05$) increased AREase activity in HDL₁. Rats treated with α -CYP alone had a significant ($p < 0.05$) increase in the activity of PON. This increase was however not observed in the groups co-administered with α -lipoic acid and quercetin. The results demonstrated that administration of α -lipoic acid and quercetin to α -CYP treated rats prevented with mild alterations of the activities of AChE and PON.

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9650 Rockville Pike
Bethesda, MD 20814
301-634-7000

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