



## The effect of *Hippophae rhamnoides* Extract on Ischemia Reperfusion-Induced Brain Injury in Rats

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**SUMMARY.** The aim of this study was to examine the effects of *Hippophae rhamnoides* extract (HRE), known to have antioxidant properties, on ischemia reperfusion-induced brain injury in rats. Eighteen albino Wistar male rats were divided into three equal groups: 15 min of brain ischemia-3 h of reperfusion (BIR) group, 50 mg/kg HRE + brain ischemia-reperfusion (HRE + BIR) group, and control group for sham operation (SHAM). Malondialdehyde (MDA) level, myeloperoxidase (MPO) activity and 8-OHdG levels significantly increased, whereas total glutathione (tGSH) level, glutathione reductase (GSHRd), glutathione s-transferase (GST) activities decreased in the brain tissues of BIR group compared to SHAM group. HR application reversed these changes and brought the levels closer to the level of SHAM group. This study has revealed that HR inhibits IR-induced oxidative damage and inflammation in rat's brain biochemically and it is effective in maintaining antioxidant activity and protecting against DNA damage in the tissue.

**RESUMEN.** El objetivo de este estudio fue examinar los efectos del extracto de *Hippophae rhamnoides* (HRE), conocido por tener propiedades antioxidantes, sobre la lesión cerebral inducida por reperfusión de isquemia en ratas. Dieciocho ratas Albino Wistar se dividieron en tres grupos iguales: 15 min de isquemia cerebral-3 h de grupo de reperfusión (BIR), 50 mg/kg HRE + isquemia-reperfusión cerebral (HRE + BIR) y grupo de control para la operación simulada (SHAM). El nivel de malondialdehído (MDA), la actividad de mieloperoxidasa (MPO) y los niveles de 8-OHdG aumentaron significativamente, mientras que el nivel de glutatión total (tGSH), la glutatión reductasa (GSHRd) y las actividades de glutatión s-transferasa (GST) disminuyeron en los tejidos cerebrales del grupo BIR en comparación al grupo SHAM. La aplicación de recursos humanos revirtió estos cambios y acercó los niveles al nivel del grupo SHAM. Este estudio ha revelado que HR inhibe el daño oxidativo inducido por IR y la inflamación en el cerebro bioquímicamente y es eficaz para mantener la actividad antioxidante y proteger contra el daño del ADN en el tejido.

**KEY WORDS:** brain, *Hippophae rhamnoides*, ischemia reperfusion injury, rat.

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