



Research article

## Curcumin alleviates liver injury and altered monoamines level in cerebral cortex of sepsis-induced rats

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### Abstract

Sepsis imposes a great economic burden on healthcare systems worldwide. It may occur after abdominal surgery, burns, hemorrhage or trauma and remained a major challenge for researchers and clinicians. Natural plant products were used as remedies in alternative medicine throughout the world. About 75% of individuals in developing countries depend on natural products for healthcare. Curcumin (Cur), is a polyphenol isolated from *Curcuma longa* having wide spectrum of biological functions. Cur has been used as a potential therapeutic agent in some pathological conditions and against many diseases. The present study was designed to explore whether Cur protects the antioxidant system and the immune response of liver, and the brain neurotransmitters against inflammation produced by sepsis induction. Sepsis-induced toxicity in adult albino rats was detected by the Complete Blood Count, physiological parameters as liver enzymes in serum; aspartate and alanine aminotransferases, oxidative stress (oxidant and antioxidant) in liver tissue, Nitrites, Nitrates, Malondialdehyde, Glutathione disulfide, Glutathione, Catalase and Super Oxide Dismutase levels as well as immunological studies; Tumor Necrosis Factor-alpha and Prostaglandin E2 levels in both serum and liver tissue, molecular studies (reverse transcriptase polymerase chain reaction RT-PCR) for Interleukin 8, Prostaglandin-E 2, Cyclooxygenase-2 and inducible Nitric Oxide Synthase genes, and supported by histopathological examination of liver tissue. Neurochemical studies estimated levels of Norepinephrine, Dopamine and Serotonin in the cerebral cortex of rats' for all groups. The present results indicated that Cur was effective in alleviating sepsis-induced severe oxidative stress and also, improved the immune response of liver and alleviate septic neurotoxic problems.