
Abstract
PURPOSE OF REVIEW:
In recent years, evidence has mounted in favor of the antiinflammatory, immunomodulatory and cytoprotective effects of the simplest amino acid L-glycine. This article will focus on the recent findings about the responsible mechanisms of protection and review the beneficial effects of glycine in different disease states.

RECENT FINDINGS:
Glycine protects against shock caused by hemorrhage, endotoxin and sepsis, prevents ischemia/reperfusion and cold storage/reperfusion injury to a variety of tissues and organs including liver, kidney, heart, intestine and skeletal muscle, and diminishes liver and renal injury caused by hepatic and renal toxicants and drugs. Glycine also protects against peptidoglycan polysaccharide-induced arthritis and inhibits gastric secretion and protects the gastric mucosa against chemically and stress-induced ulcers. Glycine appears to exert several protective effects, including antiinflammatory, immunomodulatory and direct cytoprotective actions. Glycine acts on inflammatory cells such as macrophages to suppress activation of transcription factors and the formation of free radicals and inflammatory cytokines. In the plasma membrane, glycine appears to activate a chloride channel that stabilizes or hyperpolarizes the plasma membrane potential. As a consequence, agonist-induced opening of L-type voltage-dependent calcium channels and the resulting increases in intracellular calcium ions are suppressed, which may account for the immunomodulatory and antiinflammatory effects of glycine. Lastly, glycine blocks the opening of relatively non-specific pores in the plasma membrane that occurs as the penultimate event leading to necrotic cell death.

SUMMARY:
Multiple protective effects make glycine a promising treatment strategy for inflammatory diseases.