Ginsenoside Rg3 is a triterpene saponin found in *Panax* that exhibits neuromodulatory, cognition enhancing, anti-inflammatory, antioxidative, anti-angiogenic, and anticancer activities. Ginsenoside Rg3 activates KCNQ1/Kv7.1 K+ channels and the γ2 subunit of GABA-A receptors and inhibits the α10 subunit of nicotinic acetylcholine receptors (nAChRs). In animal models, ginsenoside Rg3 decreases expression of TNF-α, IL-1β, and COX-2 in the hippocampus, improving learning and memory deficits. In vitro, ginsenoside Rg3 prevents LPS-induced upregulation of TNF-α, IL-1β, and IL-6 levels and decreases activation of microglia. In other animal models, this compound decreases oxidative stress by increasing activity of catalase, superoxide dismutase (SOD), and lysozyme and decreasing levels of NO and malondialdehyde. Ginsenoside Rg3 also exhibits anti-angiogenic benefit, inhibiting VEGF/p38/ERK signaling to inhibit tubular formation and migration of endothelial progenitor cells. In osteosarcoma cells, this compound increased DNA damage by inducing strand breaks into double-stranded DNA.

References