

## Abstract

Morphine, which is primarily used in medicine as a strong analgesic, has been studied for a long amount of time for its protective effects on neural tissue. Morphine demonstrates its neuroprotective role in ischemic disorders because it induces a higher tolerance to glucose and oxygen deprivation among neurons. However, morphine has a protective influence not only on neurons, but also on neuroglia, especially on astrocytes. Pathological disorders can result in the over-release of neurotransmitters, which include glutamate, which is known for its excitotoxicity at excessive concentration. Morphine even in this case effectively blocks the effect of glutamate, thus preventing apoptosis of cells. However, there is also evidence of an apoptotic effect of morphine on cells, as in some cases it increases the synthesis and activity of proapoptotic factors. However, the apoptotic effect of morphine does not always affect the organism only negatively. There is also evidence of its effect on the regulation of the tumour development by using morphine-induced apoptosis.