Ifosfamide

Ifosfamide also marketed as Ifex) is a nitrogen mustard alkylating agent used in the treatment of cancer.

It is sometimes abbreviated as “IFO”.

It is on the WHO Model List of Essential Medicines, the most important medications needed in a basic health system.

It is given as a treatment for a variety of cancers, including:

Testicular cancer

Breast cancer

Lymphoma (Hodgkin and non-Hodgkin)

Soft tissue sarcoma

Osteosarcoma or bone tumor

Lung cancer

Cervical cancer

Ovarian cancer

It is a white powder which, when prepared for use in chemotherapy, becomes a clear, colorless fluid. The delivery is intravenous.

Ifosfamide is often used in conjunction with mesna to avoid internal bleeding in the patient, in particular hemorrhagic cystitis.

Ifosfamide is given quickly, and in some cases can be given as quickly as an hour.

Ifosfamide (IFA), a commonly used chemotherapeutic drug, has been frequently associated with encephalopathy and central nervous system toxicity. The present study aims to investigate whether morin could protect against acute IFA-induced neurotoxicity. Morin was administered to male rats once daily for 2 consecutive days at doses of 100 and 200 mg/kg body weight (BW) orally. IFA (500 mg/kg BW; i.p.) was administered on second day. The results showed that morin markedly inhibited the production of acetylcholinesterase (AChE), butrylcholinesterase (BChE), carbonic anhydrase (CA), glial fibrillary acidic protein (GFAP), brain-derived neurotrophic factor (BDNF) and nuclear factor erythroid 2-related factor 2 (Nrf-2) induced by IFA. Morin ameliorated IFA-induced lipid peroxidation, glutathione (GSH) depletion, and decrease antioxidant enzyme activities, catalase (CAT), superoxide dismutase (SOD) and glutathione peroxidase (GPx). Histopathological changes and immunohistochemical expressions of c-Jun N-terminal kinase (JNK) and c-Fos in the IFA-induced brain tissues were decreased after administration of morin. Furthermore, morin was able to down regulate the levels of inflammatory and apoptotic markers such as nuclear factor kappa B (NF-κB), neuronal

nitric oxide synthase (nNOS), tumor necrosis factor-α (TNF-α), p53, cysteine aspartate specific protease-3 (caspase-3) and B-cell lymphoma-2 (Bcl-2). Taken together, our results demonstrated that morin elicited a typical chemoprotective effect on IFA-induced acute neurotoxicity [1].

1)
Çelik H, Kucukler S, Çomaklı S, Özdemir S, Caglayan C, Yardım A, Kandemir FM. Morin attenuates ifosfamide-induced neurotoxicity in rats via suppression of oxidative stress, neuroinflammation and neuronal apoptosis. Neurotoxicology. 2019 Nov 10. pii: S0161-813X(19)30131-7. doi: 10.1016/j.neuro.2019.11.004. [Epub ahead of print] PubMed PMID: 31722249.