Medroxyprogesterone acetate

Medroxyprogesterone acetate (MPA), also known as depot medroxyprogesterone acetate (DMPA) and sold under the brand name Depo-Provera among others, is a hormonal medication of the progestin type.

It is used as a method of birth control and as a part of menopausal hormone therapy.

It is also used to treat endometriosis, abnormal uterine bleeding, abnormal sexuality in males, and certain types of cancer, among other indications.

The medication is available both alone and in combination with an estrogen.It is taken by mouth or by injection into a muscle or fat.

Altinoz et al., from the Neuroacademy Research Group, Department of Neurosurgery Memorial Hospital, Department of Medical Biochemistry, Acibadem University; Department of Neurology, Kizilay Hospital, Bakirkoy, Istanbul, Turkey; Department of Psychiatry, Maastricht University, Holland, Netherlands.Department of Neurosurgery, Department of Neuroimmunology, Neurological Institute, McGill University, Montreal Canada, were the first to show that medroxyprogesterone acetate (MPA) reduces rat C6 glioma growth in vitro. Now they aimed to determine the effects of MPA on human brain cancers (particularly glioblastoma) in vitro and C6 glioma in vivo.

They evaluated the effects of MPA on: i) monolayer growth of human U87 and U251 glioblastoma, ii) 3D-spheroid growth and invasion of C6 rat glioma and human U251 glioma, iii) interactions with PI3-Kinase inhibitors and coxsackie-adenovirus receptor (CAR) in modifying 3D-spheroid invasion of glioma.

MPA at low doses (3.25-13 µM) insignificantly stimulated and at high doses (above 52 µM) strongly suppressed the growth of human U87 and U251 cells in vitro. MPA also binds to glucocorticoid receptors similar to dexamethasone (Dex) and unexpectedly, PI3-Kinase inhibitors at low doses suppressed anti-invasive efficacies of MPA and Dex. MPA exerted higher invasion-inhibitory effects on CAR-expressing human glioma cells. Lastly, MPA suppressed growth of C6 glioma implanted into rat brain.

Progesterone analogues deserve to be studied in future experimental models of high grade glial brain tumors [1].

1)
Altinoz MA, Nalbantoglu J, Ozpinar A, Emin Ozcan M, Del Maestro RF, Elmaci I. From epidemiology and neurodevelopment to antineoplasticity. Medroxyprogesterone reduces human glial tumor growth in vitro and C6 glioma in rat brain in vivo. Clin Neurol Neurosurg. 2018 Jul 19;173:20-30. doi: 10.1016/j.clineuro.2018.07.012. [Epub ahead of print] PubMed PMID: 30055402.