DEXAMETHASONE INTRANASAL DELIVERY EFFICIENTLY CONTROLS LPS-INDUCED MURINE NEUROINFLAMMATION

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Neuroinflammation (NI) is the hallmark of several neurological diseases. Synthetic glucocorticoids (GCs) are the first-line immunosuppressive drugs used to control NI. The high systemic levels required for brain-specific targeting lead to favor multiple undesirable dysfunctions that limit their use. Therefore, there is an urgent need for improving the current therapeutic approach to control NI. The intranasal route is being increasingly employed for drug delivery to the brain since it eases the entry of drugs into the central nervous system through the olfactory nerve.

In this study, GC intranasal and intravenous administration was compared in their effectiveness in controlling experimentally-induced NI by systemic lipopolysaccharide injection.

Mice treated intranasally with dexamethasone (IN-DX) controlled NI more effectively than those intravenously injected. Indeed, a higher significant reduction in IL-6 levels, in the percentage of CD45+/CD11b+/Ly6G+ cells and in GFAP immunostaining, was observed in IN-DX-treated mice that in IV-DX-treated.

Altogether, these results indicate that IN-DX administration may offer a more efficient alternative than systemic administration to control NI in different neuropathologies.