

FIG. 8 Mechanism action of hydrogel by intrathecal route.

3.4. Intranasal Drug Delivery

Intranasal drug delivery is the administration of the drug through nose by insufflated method. Brain-targeted intranasal delivery helps to transport drug across the olfactory epithelium to brain. The distal areas of the CNS, olfactory bulb or in the brainstem are the main part for the distribution of the drug through intranasal administration. Fig. 9 shows the direct delivery of the formulation to the brain with the help of the nasal route. In this administration, extracellular route is the main pathway for the delivery. In extracellular route the drug is present between the supporting cells, where the drug is passing through paracellular cleft, the lamina propria, perineural space, and reaches at the subarachnoid space. Many of the recent studies have proved the direct uptake of drug by brain and cerebrospinal fluid by adjusting the molecular weight and lipophilicity of the formulation. Table 4 shows the increase in the bioavailability and permeability of lipid-formulation given by the nasal route. A new approach in intranasal delivery includes use of in situ gelation method. In in situ gelation method, the sol gets converted to the gel formation helps in the adhesion to the mucous and leads to control release of the drug [45].

3.5. Receptor-Mediated Opening

Receptor-mediated opening is the process of getting nutrients and materials into the cell. A specific receptor

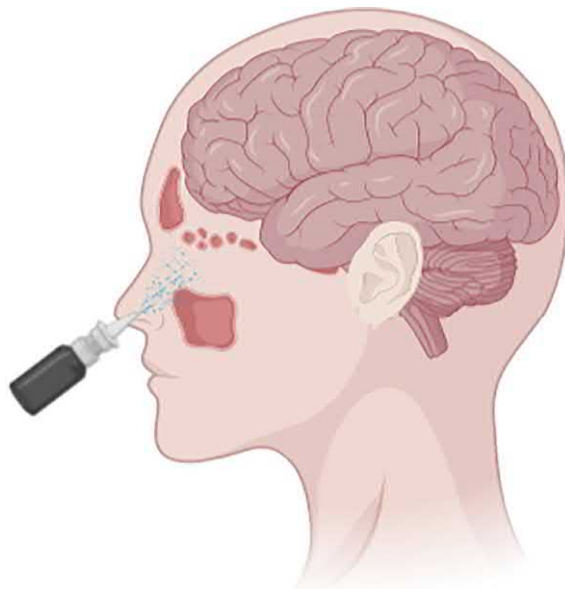


FIG. 9 Intranasal drug delivery.

is present on the cell surface, which bind tightly to the extracellular macromolecule, thus forming a pathway for the entry of the outside materials. Adenosine is purine nucleoside involved in a myriad host functions and adenosine receptor (AR) substrates modulate BBB