1: Int J Pharm. 2007 Jun 29;338(1-2):94-103. Epub 2007 Feb 3.

Nasal administration of an angiotensin antagonist in the rat model: Effect of bioadhesive formulations on the distribution of drugs to the systemic and central nervous systems.

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The effect of bioadhesive formulations on the direct transport of an angiotensin antagonist drug ((14)C-GR138950) from the nasal cavity to the central nervous system was evaluated in a rat model. Three different bioadhesive polymer formulations (3% pectin LM-5, 1.0% pectin LM-12 and 0.5% chitosan G210) containing the drug were administered nasally to rats by inserting a dosing cannula 7mm into the nasal cavity after which the plasma and brain tissue levels were measured. It was found that the polymer formulations provided significantly higher plasma levels and significantly lower brain tissue levels of drug than a control, in the form of a simple drug solution. Changing the depth of insertion of the cannula from 7 to 15mm, in order to reach the olfactory region in the nasal cavity significantly decreased plasma levels and significantly increased brain tissue levels of drug for the two formulations studied (1.0% pectin LM-12 and a simple drug solution). There was no significant difference between the drug availability for the bioadhesive formulation and the control in the brain when the longer cannula was used for administration. It is suggested that the conventional rat model is not suitable for evaluation of the effects of bioadhesive formulations in nose-to-brain delivery.

PMID: 17337137 [PubMed - in process]