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Residence time and uptake of porous and cationic maltodextrin-based nanoparticles in the nasal mucosa: comparison with anionic and cationic nanoparticles

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ABSTRACT

Different types of biodegradable nanoparticles (NP) have been studied as nasal mucosa cell delivery systems. These nanoparticles need to strongly interact with mucosa cells to deliver their payload. However, only a few simultaneous comparisons have been made and it is therefore difficult to determine the best candidate. Here we compared 5 types of nanoparticles with different surface charge (anionic or cationic) and various inner compositions as potential vectors: cationic and anionic liposomes, cationic and anionic PLGA (Poly Lactic co-Glycolic Acid) NP and porous and cationic maltodextrin NP (cationic surface with an anionic lipid core: NPL). We first quantified their nasal residence time after nasal administration in mice using *in vivo* live imaging and NPL showed the longest residence time. *In vitro* endocytosis

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