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# Specific role of polysorbate 80 coating on the targeting of nanoparticles to the brain

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## Abstract

It was reported that nanoparticles with polysorbate 80 (Tween 80, T-80) coating represented tools used for delivering drugs to brain. Nevertheless, disputations were once aroused for some complications. Aimed to have a better understanding of the specific role of T-80 coating on nanoparticles and simplify the problem, the direct observation of brain targeting combined with in vivo experiments was carried out in this work using the model nanoparticles (MNPs). The presence of a complex composed by the model loading, T-80 and nanoparticles was found in the preparation of MNPs. The result was further supported by some surface properties of MNPs. Being bound to nanoparticles that were overcoated by T-80 later, was necessary for the loading to be delivered to brain. Partial coverage was enough for T-80 coating to play a specific role in brain targeting. It seemed that brain targeting of nanoparticles was concerned with the interaction between T-80 coating and brain micro-vessel endothelial cells. Therefore, the specific role of T-80 coating on nanoparticles in brain targeting was confirmed.