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(OP 153) *In Vitro* Characterization on the Interactions between Carboxymethyl-Chitosan/Poly(Amidoamine) Dendrimer Nanoparticles and Neurons/Glial Cells

J.M. Oliveira[2,3], A.J. Salgado[1], R.P. Pirraco[2,3], V.H. Pereira[1], J.S. Fraga[1], A.P. Marques[2,3], N.M. Neves[2,3], J.F. Mano[2,3], R.L. Reis[2,3], N. Sousa[1]

[1]Life and Health Sciences Research Institute (ICVS), School of Health Sciences, University of Minho, Braga, Portugal
[2]3B's Research Group—Biomaterials, Biodegradables and Biomimetics—Department of Polymer Engineering, University of Minho, Braga, Portugal
[3]IBB, Institute for Bioengineering and Biotechnology, PT Associated Lab, Braga, Portugal

Central nervous system associated disorders are a leading cause of disability worldwide. In recent years targeted drug delivery nanoparticle based systems for intracellular application have been put forward has a possible therapeutic route to follow. In this sense the objective of the present report was to characterize and evaluate the possible applicability of recently developed carboxymethylchitosan/poly(amidoamine) (CMC/PAMAM) dendrimer nanoparticles in central nervous system (CNS) cell populations. Atomic force and transmission electron microscopy observations revealed that these nanoparticles possessed a nanosphere-like shape and sizes between 2–123 nm. Moreover it was also possible to confirm by UV/VIS spectrophometry that these nanoparticles could be bound to FITC for tracing purposes. Experiments with post-natal hippocampal neurons and cortical glial cells revealed that both cell populations were able to internalize the CMC/PAMAM dendrimer nanoparticles. The internalization rates changed according to the cell populations, reaching a maximum peak after 48 hours of incubation. Overal astrocytes and microglial cells disclosed higher internalizaton rates (around 100% of the total cell sub-population) followed by neurons and oligodendrocytes (up to 80–90% of the observed cells). Further experiments for periods of up to 7 days revealed that these values were maintained or even increased if CMC/PAMAM dendrimer nanoparticles were periodically added to the culture medium. Finally it was also observed that cell viability and proliferation were not significantly affected by the presence of the above referred nanoparticles. Further studies will be focused on loading relevant drugs for future applications in CNS disorders.