Epigallocatechin-3-Gallate Loaded PEGylated-PLGA Nanoparticles: A New Anti-Seizure Strategy for Temporal Lobe Epilepsy

Amanda Cano [1, 2*]

[1] University of Barcelona, Spain
[2] Institute of Nanoscience and Nanotechnology (IN2UB), Spain

Abstract

Temporal lobe epilepsy is the most common type of pharmacoresistant epilepsy in adults. Epigallocatechin-3-gallate has aroused muchinterest because of its multiple therapeutic effects, but its instability compromises the potential effectiveness. PEGylated-PLGA nanoparticles of Epigallocatechin-3-gallate were designed to protect the drug and to increase the brain delivery. Nanoparticles were prepared by the double emulsion method and cytotoxicity, behavioral, Fluoro-Jade C, Iba1 and GFAP immunohistochemistry studies were carried out to determine their effectiveness. Nanoparticles showed an average size of 169 nm, monodisperse population, negative surface charge, encapsulation efficiency of 95% and sustained release profile. Cytotoxicity assays exhibited that these nanocarriers were non-toxic. Neurotoxicity and immunohistochemistry studies confirmed a decrease in neuronal death and neuroinflammation. In conclusion, Epigallocatechin-3-gallate PEGylated-PLGA nanoparticles could be a suitable strategy for the treatment of temporal lobe epilepsy.

Biography:

Amanda Cano possesses a current position of adjunct professor of Physical Chemistry in the Department of Pharmacy, Pharmaceutical Technology and Physical Chemistry of the Faculty of Pharmacy of the University of Barcelona. She graduated on Pharmacy at the University of Salamanca in 2013 and got her Master's degree in 2014 at the University of Barcelona. In 2015, she gained a competitive fellowship from the Spanish Ministry of Science and Innovation to perform her Ph.D. at the University of Barcelona, obtaining the Doctor degree in 2018 with an excellent Cum Laude with international mention. In this period, she combined the experimental activity with teaching experience. Recently, she obtained a competitive post-doctoral fellowship from the Spanish Ministry of Science and Innovation to start her post-doctoral studies in the field of clinical evaluation of genetic biomarkers of neurodegenerative diseases.

Speaker Publications:

1. Sánchez-López E, Cano A, Espina M et al; "Current Applications of Nanoemulsions in Cancer Therapeutics"; Nanomaterials (Basel). 2019/ 31;9(6):821.
2. Amanda Cano, Elena Sánchez-López, Miren Ettcheto et al; "Current advances in the development of novel polymeric nanoparticles for the treatment of neurodegenerative diseases"; Nanomedicine. 2020/15/ 123.

6th International Conference on Epilepsy & Treatment; Webinar- September 21-22, 2020.

Abstract Citation:

Amanda Cano, Epigallocatechin-3-Gallate Loaded PEGylated-PLGA Nanoparticles: A New Anti-Seizure Strategy for Temporal Lobe Epilepsy, Epilepsy 2020, 6th International Conference on Epilepsy & Treatment; Webinar- September 21-22, 2020 (https://epilepsytreatment.neurologyconference.com/abstract/2020/epigallocatechin-3-gallate-loaded-pegylated-plga-nanoparticles-a-new-anti-seizure-strategy-for-temporal-lobe-epilepsy)