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Natural, biological based nano carriers are preferential for drug delivery

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Targeted drug delivery is one of the novel directions of the pharmacology. This direction includes numerous sub-types of drug delivery and one of them is the delivery of medical compounds by means of the biological based compounds or cells like erythrocytes, albumin nano particles, macrophages, antibodies against pathology-initiated receptors, their targetable parts or antibodies against circulated in the organism natural carriers of the medicines, including predominantly albumins, globulins as well as red blood cells. We examined the circulation time of another compound-allopurinol, which is known as the inhibitor of xanthine oxidoreductase and passed several clinical trials as the antioxidant used for the treatment of ischemic stroke. We proposed, Allopurinol in experimental settings might serve as the compound, preventing the oxidative stress, whereas, the albumin micro particles might preserve oncotic pressure and prevent Blood Brain Barrier (BBB) disruption. Glutaraldehyde was used for the polymerization of albumin. Determination of the particle size was performed by the light as well as phase contrast microscopies and analyzed by Pixcavator 6.0 and Image Tool programs. Modification and establishment of iodine-based method served as the base for quantification of bound with the particles and free Allopurinol. We have used intracranial peroxide injection as the reflection of oxidative stress part of the stroke pathology. Also, Evans blue penetration was the indicating agent, evidencing about the extent of BBB disruption. There were compared the mortality rate, Evans blue extravasation into the brain parenchyma, as well as the activity of xanthine oxidoreductase in 7 groups of the animals injected with the large, middle, small size of the albumin micro particles coupled and not coupled with allopurinol and the group injected only with the allopurinol. The most prominent results are revealed after injection of small size micro particles coupled with allopurinol.

Biography

Danielyan Kristine has graduated from Yerevan State University, Department of Biochemistry (MS in Biochemistry) as well as obtained MS degree in Pharmacy. She has completed her Post-doctorate at Cerebral Vascular Disease Research Center, Department of Neurology, University of Miami School of Medicine with the further extension of the qualification in Institute for Environmental Medicine as well as Department of Pharmacology of the University of Pennsylvania, USA. She has more than 30 publications to her credit.

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