

The role of apolipoprotein E in uptake of atovaquone into the brain in murine acute and reactivated toxoplasmosis

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We investigated whether coating of atovaquone nanosuspensions (ANSs) with apolipoprotein E (apoE) peptides improves the uptake of atovaquone into the brain. The passage across the blood-brain barrier (BBB) of ANSs stabilized by polysorbate 80 (Tween 80), poloxamer 184 (P184), or poloxamer 338 (P338) and the same formulations coated with apoE peptides were analyzed *in vitro* and *in vivo*. Passage through a rat coculture model of the BBB did not differ between individual atovaquone formulations, and the addition of apoE peptides did not enhance the transport. Following the induction of toxoplasmic encephalitis (TE) in mice, treatment with all atovaquone formulations reduced the number of parasites and inflammatory foci compared with untreated mice. Uptake of atovaquone into the brain did not depend on coating with apoE. Finally, incubation of apoE peptide-coated ANSs with brain endothelial cells for 30 min did result in the accumulation of nanoparticles on the cell surface but not in their uptake into the cells. In conclusion, ANSs coated with Tween 80 or poloxamers showed therapeutic efficacy in murine toxoplasmosis. ApoE- and apoE-derived peptides do not induce the uptake of ANSs into the brain. Alternative mechanisms seem to be in operation, thereby mediating the passage of atovaquone across the BBB.

Biography

Hend Shubar has completed her Ph.D. at the age of 36 years from Berlin Free University, Germany. She is working as a lecturer at the department of Microbiology and Immunology, faculty of Pharmacy, Tripoli University, Libya. She has published 4 papers in the field of drug targeting.

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The graphene stakeholders association: Accelerating commercialization through collaboration

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The introduction and commercialization of new material discoveries is a notoriously difficult process and is generally measured in decades. Numerous examples of the lag time between a material's first appearance in the laboratory, technical publications, and patent literature and the true utilization of that material in commercial applications can be found. PTFE, amorphous metals, OLEDs, and carbon nanotubes are just a few of the examples. What often interferes with the rapid deployment of these materials is a combination of unrealistic expectations and inadequate understanding. Complicating this is the general lack of standard nomenclature, testing standards, metrology, and other fundamental elements, including definitions, that allow researchers and users to collaborate and explore effectively.

The graphene stakeholders association is a not-for-profit organization that was founded in early 2013 to bring together a community of researchers, laboratories, producers, processors, and end-users to reduce the confusion, minimize the barriers to entry, understand the challenges, establish common terminology, test procedures, and standards in an attempt to catalyze the rapid and effective commercialization of one of the most significant materials discoveries of the past fifty years.

Biography

Keith A. Blakely is a serial entrepreneur who has founded and overseen the growth of numerous advanced materials companies including Advanced Refractory Technologies, Inc., AP Materials, NanoDynamics, Inc., NanoMech, Epik Energy, and others. He has been instrumental in the development and commercialization of numerous new materials including submicron ceramics, metal matrix composites, thin film diamond nanocomposites, carbon nanotubes, and graphene. He holds several US patents, is the two time winner of R&D Magazines IR-100 Award, was named Small Times Business Leader of the Year, and has been interviewed and profiled in numerous national and international business publications. He is the co-founder of the Graphene Stakeholders Association and CEO of The InVentures Group which is headquartered in Buffalo, NY.

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