Synthesis of Polymer Coated Ceria Nanoparticles for Biomedical Applications

Cerium oxide (CeO2) nanoparticles exhibit potent antioxidant properties, as well as other desirable therapeutic characteristics such as prolonging neuronal cell life and protecting cells against UV radiation. Current methods of ceria nanoparticle synthesis and coating are expensive and have little potential to be approved by the regulatory organizations (FDA, GMC, etc.). In order for such a product to reach the general public a synthesis process which is efficient and scalable to commercial production is necessary. Additionally it is paramount that the coated particles exhibit antioxidant properties identical to their uncoated counterparts. Current methods do not meet such requirements.

**Technical Details**

The invention meets these challenges by incorporating a polymer coating around the nanoceria particles which help to increase its solubility and biocompatibility, while utilizing a novel synthesis process which is efficient and primed to facilitate this product’s entrance into the therapeutic market. The coated ceria oxide nanoparticles also have the potential to be targeted to specific areas or disease sites within the body to concentrate the effects of the agent.

**Benefits**

- Cost effective, efficient and green method of synthesis
- Conforms well with potential commercial production, GMC and FDA regulations
- The technology displays good stability, solubility and great potential as a future therapeutic

**Applications**

- Ceria nanoparticles and their therapeutic administration as antioxidants, free-radical scavengers, and autocatalytic agents
- Treatment and prevention of diseases:
  - Cancer
  - Blindness
  - Stroke
  - Cardiac infarction

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See related technology: “Polymer Coated Nanoparticles For Selective Cytoprotection” Technology number: 31194

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