Nanoceria

Inflammation and oxidative stress are major problems in peripheral nerve injury. Nanoceria can manipulate antioxidant factor expression, stimulate angiogenesis, and assist in Axon regeneration. We fabricate collagen/nanoceria/polycaprolactone (COL/NC/PCL) conduit by asymmetrical three-dimensional manufacture and find that this scaffold successfully improves Schwann cell proliferation, adhesion, and neural expression. In a 15-mm rat sciatic nerve defect model, we further confirm that the COL/NC/PCL conduit markedly alleviates inflammation and oxidative stress, improves microvessel growth, and contributes to functional, electrophysiological, and morphological nerve restoration in the long term. Our findings provide compelling evidence for future research in antioxidant nerve conduit for severe neurological defects [1].

1)
Qian Y, Han Q, Zhao X, Li H, Yuan WE, Fan C. Asymmetrical 3D Nanoceria Channel for Severe Neurological Defect Regeneration. iScience. 2019 Jan 14;12:216-231. doi: 10.1016/j.isci.2019.01.013. [Epub ahead of print] PubMed PMID: 30703735.