

Antioxidative Resveratrol Particles as a Bioactive Component for Material Design

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There is a growing need for multifunctional components in material design, especially in tissue engineering. Among many natural compounds, polyphenols are gaining interest as biologically active additives of novel materials. Stilbenoid polyphenol resveratrol is one of the most known, mainly because of its antioxidative, antibacterial, anticancer, neuroprotective and other beneficial effects. To allow most efficient use of resveratrol, several nanoformulations have shown promise, but most of them also involve other, toxic or expensive compounds, beside resveratrol. During our research, we synthesized particles of pure resveratrol, in an elongated, nanobelt-like form. The shape of the particles, as well as absence of any polymer or other carriers makes these particles easy to handle for further implementation. For preliminary assessment of the functionality of these particles, several assays were employed. DPPH, TBA and FRAP assay proved antioxidative potential of obtained particles by several mechanisms in the concentration range from 1 to 10 µg/ml. *Artemia salina in vivo* bioassay was used to show high bioactivity and also biocompatibility of the particle suspension. All of the results indicated that there is a high potential for use of these resveratrol particles as bioactive agent or as component in various composite biomaterial formulations.