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### Carboxylic acids as linkers on the surface of titanate nanotubes for further functionalization

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Nowadays, the rapid growing in the field of nanotechnology deserves an exceptional attention as it is bringing several advantages to the modern life and shaping the future of science with its unique nano-sized products. Among these phenomenal nanomaterials, titanate nanotubes (TNTs) were presented as a promising alternative to the previous organic ones with impressive properties such as good biocompatibility and processability. These remarkable characteristics could be improved/adjusted by surface modification using the appropriate molecules which are not always capable to be bonded directly to the surface. For this reason, carboxylic acids were used as linkers for successful PEGylation of TNTs to improve their bioavailability. The success of this functionalization via acrylic acid linker was examined using FT-IR and Raman spectroscopy which revealed that a successful association could be achieved through ionic bonding. Morphology, size and surface charge of the prepared composites were examined using scanning electron microscopy, transmission electron microscopy and zeta sizer. The results showed minor differences in morphology but considerably improved stability in aqueous media. Additionally, their toxicity was also studied by MTT assay using different carcinoma and fibroblast cell lines. The results exhibited no considerable decrease in cell viability which supports their intended future application as novel and safe platform for drug delivery.

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