Dispersion of Carbon Nanotubes in a Complex Biological Medium

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The purpose of this research is to examine the ability of tryptic soy broth (TSB), a complex bacterial growth medium, to act as a dispersing agent for single-walled carbon nanotubes (SWNT). There have been notable advances in understanding how specific proteins interact with nanotubes. However, relatively little is known about SWNT dispersion in complex media commonly used in microbiological research. The dispersions examined in this study were prepared by probe ultrasonication of a 0.1 wt% mixture of SWNT in several varieties of TSB at 60W for 30 minutes. These dispersions were subjected to centrifugation at 17,000 x *g* for one hour. Ultraviolet-visible spectroscopy of the resulting supernatants was used to characterize ability of each type of TSB to disperse SWNT. These results suggest that SWNT-tryptophan interactions are a key component of TSB's ability to disperse SWNT, and provide a starting point for additional research to assess SWNT interactions with pathogenic bacteria without interference from the medium.