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Synthesis and characterization of polyurethane nanostructures used as carrier for garlic and mistletoe

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Modern medicine combines new technologies with ancient remedies. Nanotechnology has the potential to impact almost every branch of science. Garlic and mistletoe are medicinal plants that have been known for centuries. These plants help to preserve the function of the blood circulation and so ensure the blood supply of the internal organs, tissues and the brain.

In this study, polyurethane nanostructures were synthesized by interfacial polyaddition combined with a spontaneous emulsification between an organic phase (a prepolymer based on an aliphatic diisocyante) and an aqueous phase (mixture of polyethylene glycol, diols with short chains, and Tween®20). Diluted suspensions were characterized by pH, DSC, particles size and stability measurements.

The synthesized nanostructures present a proper pH for pharmaceutical substances, heat resistance up to 280 oC, sizes between nano- and micro-scales, and good Zeta potential values. These results indicate that the synthesized polyurethane nanostructures may be a candidate as an enteric carrier (resistant to gastric juices) for garlic and mistletoe and can therefore only dissolve in the small intestine. This means that any annoying odour formation is largely prevented.

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