

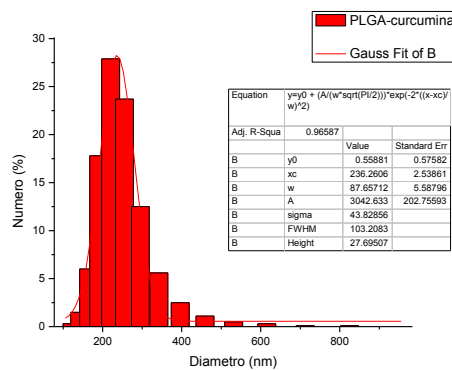
NEW FORMULATIONS NANOSTRUCTURED CONTAINING CURCUMIN FOR OPTIMIZATION OF PHOTODYNAMIC INACTIVATION OF MICROORGANISMS

Curcumin is a compound isolated from the turmeric plant, and has been shown to exhibit various pharmacological actions such as antioxidant, anti-inflammatory, antimicrobial and anti-carcinogenic activities. However, it's extremely low aqueous-solubility results in a poor systemic bioavailability. The aim of this study was develop PLGA nanoparticles containing curcumin encapsulated for effective delivery, improving water solubility and high efficacy as photosensitizer.

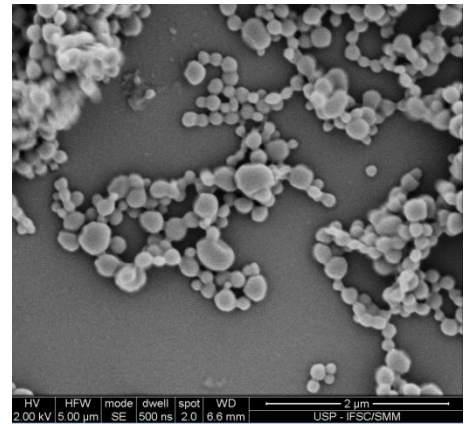
CHARACTERIZATION OF NANOPARTICLES



Synthesis of nanoparticles PLGA-curcumin by the method known as solvent evaporation or nanoprecipitation

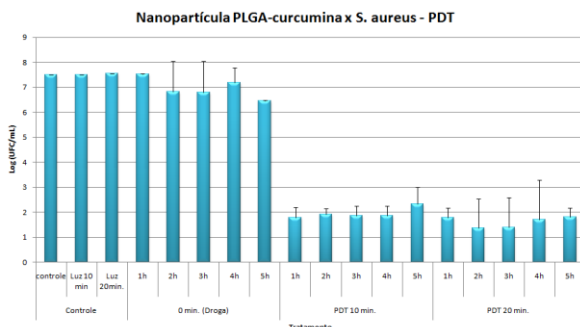


Particle size and zeta potential by Dynamic Light scattering (DLS)
 - Size: ± 236 nm.
 - Zeta potential: -30.3 ± 0.4 mV



Nanoparticles morphology
 - Characterized using transmission electron microscope (TEM)

RESULTS



PLGA-curcumin with *Staphylococcus aureus* (Gram positive bacteria). Photodynamic inactivation using PLGA-curcumin in 5 hours of incubation with 2 lighting time (10 and 20 minutes). Maximum concentration of curcumin = $1.5 \mu\text{g} / \text{mL}$.

CONCLUSIONS

In conclusion, both formulations were effective, except for *E. coli* inactivation. And the formulation of curcumin-loaded PLGA nanoparticles presented a controlled release of the photosensitizer, with significant protection of the formulation against photodegradation.