

Influence of operational parameters on the characteristics of ultrafine chitosan microparticles as a nasal drug delivery system

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In this study, chitosan microparticles were prepared with tripolyphosphate (TPP) via spray dry method. For the preparation of the ultrafine chitosan microparticles, as a nasal drug delivery system, sonication was applied in very dilute chitosan solution during crosslinking. The applied sonication power was varied 15, 45 or 90 watt. The microparticles were characterized by scanning electron microscopy (SEM) and optical microscopy. The increasing of sonication power results change in microparticles morphology from spherical shape and smooth surface to irregular pseudo-spherical shape and wrinkled surface. Decrease of crosslinking time from 60 to 30 min has similar effect on the surface morphology of the chitosan microparticles. The prepared chitosan microparticles were extremely small and the mean particle sizes vary between 1.19 to 1.32 μm .