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CASHEW GUM / CHITOSAN NANOPARTICLES

H. CB PAULA[1], F. M.SOMBRA[1], RCM de PAULA[2]

[1] Departamento de Química Analítica e Físico-Química, Universidade Federal do Ceará, Fortaleza- Ceará, Brazil e-mail: hpaula@ufc.br
[2] Universidade Federal do Ceará, Fortaleza-Ceará, Brazil. Departamento de Orgânica e Inorgânica.

Nanoparticles of polysaccharides and chitosan have been object of investigations by researchers [P1]all over the world. Cashew gum is a anionic polysaccharide which can easily make a polyeletrolyte complex with chitosan. Physicochemical properties of cashew gum / chitosan nanoparticles (CG/CH NP) were determined as a function of the polymer addition sequence, as well as CH/CH molar ratio charge (n+/n-). NPs were obtained by polyelectrolyte complexation and their structures were elucidated by infrared spectroscopy. The infrared spectrum of CG/CH NP displayed bands in the region 1080 – 1162 cm^{-1} assigned to pyranosidic structure and a signal at 1651 cm-1 characteristic of bond N-H amide group as well as an amino characteristic band at 1570 cm-1. By adding CG to CH or the inverse order, NPs with polication:polianion molar ratios in the range n+/n- = 0,5 – 20 were produced. Adding CG to CH resulted in small NPs (diameter smaller than 11,2 nm), for molar ratio up to n+/n- = 7,5; for larger ratios, particles as big as 429 nm were obtained. Zeta potential measurements revealed that only large NPs were stable to some extend (ξ > 30 mV) and all particle were positively charged in the range 1.07 - 63 mV. On the other hand, by adding CH to CG, for ratio as large as n+/n- = 10, small particles were produced; larger ratios yielded NPs in the range 666 - 687 nm (figure 1). In a similar way, NPs were also positively charged, however they were found to be more stable than those obtained by adding CG to CH[P2].

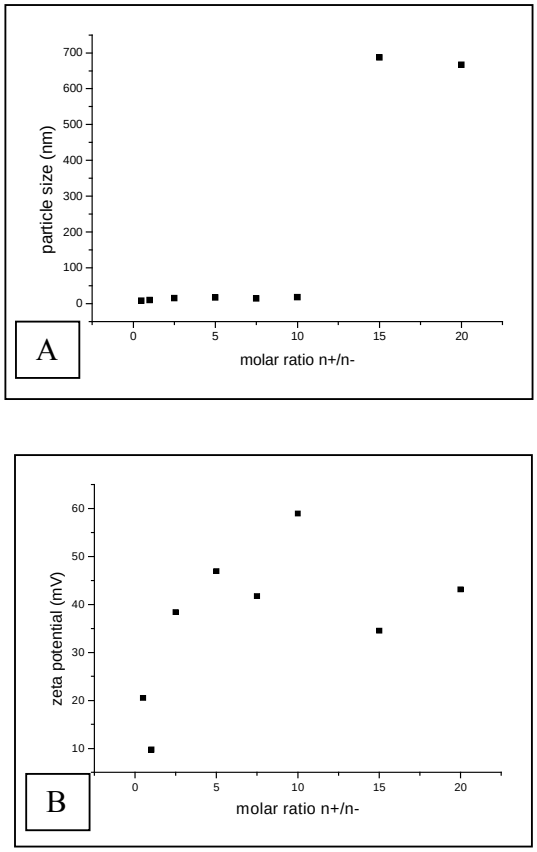

Fig. 1: Particle size (A) and zeta potential (B) as a function of molar ratio for CG/CH NPs, when CH was added to CG.

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