Application of imidazole modified C6-chitosan derivatives in the extraction of β-sitosterol from edible oil samples

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β-Sitosterol (BS), a major bioactive constituent present in plants and vegetables has shown potent anticancer effect against many human cancer cells, but owing to its poor solubility in water, its bioavailability and therapeutic efficacy is limited. In this study, C6-imidazole chitosan, C6-1-methylimidazole chitosan, C6-1-ethylimidazole chitosan, C6-1-vinylimidazole chitosan, C6-1-allylimidazole chitosan, and C6-1-butylimidazole chitosan were prepared to extract BS from edible oil samples with the method of ultrasonic assisted solid liquid extraction. The structures and properties of the new synthesized products were characterized by fourier transform infrared spectroscopy (FT-IR), scanning electron microscope (SEM), and elemental analysis (EA). The extraction abilities of derivatives were tested in the experiment with HPLC, and the % RSD and recovery values showed that the prepared chitosan derivatives had acceptable recoveries toward BS. The inter-day and intra-day recoveries of BS were 92.89 ± 4.16 and 91.83 ± 3.52 %, respectively.