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Okra-thioglycolic acid conjugate: Synthesis, characterization and evaluation as mucoadhesive polymer

N Raghavendra Naveen¹, Chakka Gopinath¹ and D Subba Rao²¹Annamacharya College of Pharmacy, India²JNTUA, India

The present inquiry endeavored to show the applicability of extracted natural gum in scheming of Mucoadhesive Drug Delivery System (MDDS). MDDS utilizes the property of certain polymers which becomes adhesive on hydration and hence can be used to deliver the drugs for a prolonged period of time. Okra gum (OG) was extracted from fresh pods *Abelmoschus esculentus* and preliminary tests were performed to confirm the nature of gum obtained. Toxicity studies were carried out according to the method of Knudsen and Curtis. Mucoadhesion force of isolated okra gum and synthetic polymers were determined by rotating cylinder method, Wilhelmy method, falling sphere method and modified physical balance method, etc. The result shows that mucoadhesive property of okra gums were comparable to Carbopol and chitosan but less Hydroxypropyl Methylcellulose (HPMC) and sodium alginate (SA) under the experimental conditions used in this study. An attempt was done to enhance the mucoadhesion property of okra gum by thiolation. Thiolation of okra gum was achieved with esterification with thioglycolic acid. Thiolated okra gum (TOG) was characterized by FTIR, DSC, XRD and SEM analysis. TOG was determined to possess 0.70 ± 0.04 mmol of thiol groups/g of polymer by Ellman's method. Comparative evaluation of mucoadhesive property of repaglinide tablets of OG and TOG by wash off test using goat intestinal mucosa revealed higher ex vivo bioadhesion time of TOG as compared to OG. Improved mucoadhesive property of TOG over the OG can be attributed to the formation of disulfide bond between mucus and thiolated pectin.

raghavendra.naveen@gmail.com

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