

## **Synthesis and Characterization of Carboxylic acid Derivatives of Chitosan for Production of Nano Fibers**

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Due to its easy availability and vast applicability, chitosan emerged as a prominent research interest in biomedical field, water purification, agriculture, food production and, cosmetics and skincare industry. Improved chemical characteristics of chitosan derivative nano fibers grabbed the attention of scientific community as it improves the applicability of the chitosan. In this study, Chitosan -aspartic acid, -lactic acid, -gallic acid and azelaic acid derivatives were synthesized. Obtained chitosan carboxylic acid derivatives were used to prepare nano fiber scaffolds using interfacial polymerization method. The molecular weight of the used chitosan was calculated using viscometric method and it was  $2.15 \times 10^6 \text{ g mol}^{-1}$ . Characterization of prepared carboxylic acid derivatives of chitosan was done using UV-Visible spectroscopy and FTIR spectroscopy. The results suggested that derivatives were completely amide bonded and free from carboxylic acid salts of chitosan, ester bonded carboxylic acid moieties or free carboxylic acids. Solubility test suggested that all the derivatives showed better solubilities in common solvents compared to pure chitosan. Degree of substitution was calculated for aspartic acid and azelaic acid derivatives of chitosan and those were 0.12 and 0.35 respectively.

**Key Words:** *Interfacial polymerization, Nano fibers*

**Acknowledgement:** Department of Chemistry, University of Ruhuna, Matara.

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