

## FUNCTIONALIZATION OF TAMARIND (*TAMARINDUS INDICA* L.) SEED POLYSACCHARIDE WITH 1,4-BUTANEDIOL DIGLYCIDYL ETHER (BDDE)

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Natural polysaccharides had increased their interest as a biomaterial in different applications due to their properties such as biocompatibility, non-toxicity, and biodegradability [1]. Tamarind seed polysaccharide (TSP) is a galactoxyloglucan, which is already extensively used for biomedical applications, due to its physical, chemical, and biological properties. However, TSP has certain limitations due to its molecular structure, such as low water solubility, the lack of charged groups on the sugar chain and the fast biodegradability [2]. To overcome these challenges and expand its potential applications, a functionalization of the TSP was obtained using 1,4-Butanediol diglycidyl ether (BDDE), well-established epoxy crosslinking agent used primarily for the formation of hyaluronic acid (HA) hydrogel. Different concentrations of the reagent were used to obtain both gels and soft gels. Characterization of the chemical-physical properties of the synthesized products were conducted by different analytical approaches, including viscosity, swelling capacity, morphology chemical structure, and molecular weight distribution. The degree of crosslinking and the evaluation of the stability of the products were obtained by NMR spectroscopy and LC-MS spectrometry after the enzymatic hydrolysis of the hydrogels.

### References:

1. A. S. A. Mohammed, M. Naveed, and N. Jost, J Polym Environ, 2021, 29(8), 2359–2371.
2. Mansingh, B.B., Binoj, J.S., Sai, N.P., Hassan, S.B., Siengchin, S., Sanjay, M.R., & Liu, Y., Current Research in Green and Sustainable Chemistry, 2021, 4.