**Synthesis and evaluation of a tannin derived tissue adhesive**

Tina Rabiee 1,\*, Parsa Mousavi 2, Hamid Yeganeh 2, Saied Nouri-Khorasani 1, Iraj Mohammadpoor-Baltork 3

(correspond author \*)

1- Department of Chemical Engineering, Isfahan University of Technology, Isfahan, 84156-83111, Iran

2- Iran Polymer and Petrochemical Institute, PO Box: 14965/115, Tehran, Iran

3- Department of Chemistry, Catalysis Division, University of Isfahan, Isfahan, 81746-73441, Iran

[t.rabiee@ce.iut.ac.ir](mailto:t.rabiee@ce.iut.ac.ir)

**Statement of Problem:** Compared with traditional wound closure methods, tissue adhesives are less likely to damage the tissues and can promote wound healing without scare marks.

**Research Purpose:** This work aims to synthesize and evaluate a novel tannin-based UV-curable tissue adhesive.

**Research Method:** Tannic acid, a natural polyphenol with potential antibacterial activity was selected as an adhesion promoter and combined with an unsaturated non-isocyanate urethane prepolymer prepared from soybean oil, itaconic acid, and CO2 gas. Proper formulations of these materials and multifunctional thiols were utilized as a high-performance tissue adhesive.

**Results and Conclusion:** This bio-based tissue adhesive represents desirable properties such as good adhesion strength, proper biocompatibility towards fibroblast cells, fast and effective curing process toward UV irradiation, and acceptable swelling ratio.

**Keywords:** Tannic acid, itaconic acid, tissue adhesive, soybean oil, Non-isocyanate PU.