

Natural gum modified mucin nanocarrier with enhanced mucoadhesion and trans-cornea infiltration for controlled drug delivery in ocular uveitis therapy

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Table S1. Ionic gelation process parameters, formulation description and environmental conditions used for synthesis of mucin nanoformulation

Formulation	Polymer (Mu) and crosslinker (Ca) ratio	4:1
Process Parameters	Stirring speed (rpm)	450 ± 100
	Needle Specification	23 gauge
	Stirring Duration (h)	4
Environmental Parameters	Ambient Temperature (°C)	25 ± 2
	Relative Humidity (%)	45 ± 5

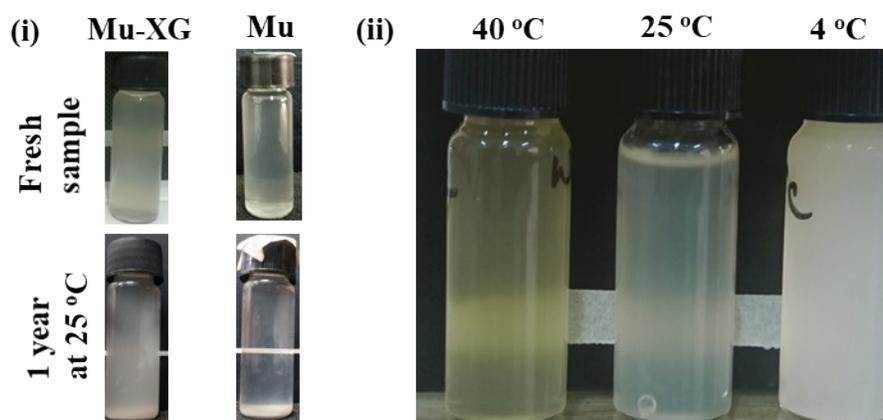


Figure S 1 Long-term visual stability of Mu-XG NP versus pure Mu nanoformulation under various storage temperatures (4 °C, 25 °C, and 40 °C). Mu-XG NP remained homogeneous even after 1 year.



Figure S 2 **Eye condition and histopathology of the positive control group.** (a) Bacteria infected eyes showing dense white mucoïd discharge, and (b) corneal opacity with cataract formation by day 4. (c) Neutrophil infiltration is visible in the corneal section (green triangles).