Glycosaminoglycans — Hyaluronan Heparan & Chondroitin — Hands-on

Gain a practical understanding of glycosaminoglycans (GAGs) including hyaluronan, heparan and chondroitin chains, their sulfation patterns and analytical behavior. This module walks through sample prep, enzymatic digestion, LC-MS workflows and data analysis to generate quantitative GAG profiles that can be linked to biology, biomaterials or bioprocess changes.

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Session Index

Session 1

Fee: Rs 8800 Apply Now

GAG Classes, Structure & Chemistry

Overview of major GAG families and biosynthetic themes

hyaluronan **heparan and heparin** **chondroitin and dermatan**

Repeating units, linkage patterns and chain organization

uronic acid and hexosamine pairs **linkage to core proteins** **domains and microheterogeneity**

Chemical properties impacting analytics

charge density and sulfation | conformation and flexibility | stability and depolymerization

Session 2

Fee: Rs 11800 Apply Now

Workflows for GAG Digestion & LC-MS

Sample preparation for GAG extraction and cleanup

cell, tissue and biofluid sources | proteoglycan enrichment basics | desalting and removal of interferents

Enzymatic depolymerization to disaccharides

lyases for heparan and chondroitin | hyaluronidases for hyaluronan | reaction controls and stopping

LC-MS methods for GAG disaccharide profiling

HILIC and reverse phase options | negative mode ESI MS and MS/MS | internal standards and calibration

Session 3

Fee: Rs 14800 Apply Now

Disaccharide Analysis & Sulfation Patterns

Peak picking, alignment and identification of GAG disaccharides

m/z and retention time windows | library and standard based ID | handling isomeric disaccharides

Quantification and composition calculation per GAG class

area integration and response factors | relative vs absolute amounts | chain length and content estimates

Describing sulfation and pattern metrics

N and O sulfation distributions | average charge per disaccharide | indexes for domain patterning

Session 4

Fee: Rs 18800 Apply Now

Mini Capstone: GAG Profiles & Interpretation

Build a small GAG profiling workflow on example datasets

from LC-MS tables to composition summaries

Summarize GAG composition and sulfation across conditions

plots for class level changes | heatmaps for disaccharide patterns | linking shifts to biology or process

Deliverables and documentation set

curated disaccharide and GAG tables | figures for reports or slides | short narrative on key GAG changes