

# CHARACTERIZATION OF NATURAL POLYMERS FOR COSMETIC APPLICATIONS

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## ABSTRACT

Hyaluronic acid (HA) is part of the glycosaminoglycan family of polysaccharides which are linear, unbranched polymers consisting of disaccharide repeat units.<sup>1,4</sup> Due to its natural occurrence and versatility, HA is used extensively in the medical and cosmetic industries. However, being a natural polymer, it lacks certain physical and mechanical properties which limits its applications.<sup>2</sup> To overcome these short falls, HA is typically modified to enhance its properties for a given application and although the modification of HA is well understood, the characterization of such natural polymers still remains a challenge.<sup>3,4</sup>

By developing an online 2D-LC approach, comprehensive information on modified and unmodified HA in terms of molar mass and chemical composition could be obtained. A 2D-LC approach would use liquid chromatography (HPLC) as the first dimension and size exclusion chromatography (SEC) as the second dimension in order to determine composition and molar mass distributions, respectively.

It is shown that, despite severe solubility challenges, optimized HPLC and SEC methods were successfully developed to determine chemical composition and molar mass distributions. More importantly, these two independent methods show great promise to be coupled online as a powerful 2D characterization platform for the characterization of challenging analytes such as modified and unmodified HA.

## References:

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