

THE DEVELOPMENT OF CHEMICAL TOOLS FOR THE INVESTIGATION OF CARRAGEENAN BIOCHEMISTRY

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Carrageenans (Figure 1) are marine carbohydrates that are found in the extracellular matrix of red macroalgae [1]. Red seaweeds produce these sulfated linear polysaccharides for structural purposes, with these carbohydrates providing flexible support to the macroalgae in the dynamic marine environment [2]. Industrially, carrageenans are known for their gelation properties and are therefore used extensively as thickening agents or for formulation purposes [3]. These polysaccharides also constitute a large biomass and are thus a precious carbon source for marine bacteria. To investigate both the biosynthetic and degradation pathways of carrageenan [4,5], chemical tools are needed to probe the putative enzymes involved. Outlined here are approaches undertaken to develop a series of chemical tools to elucidate the structure and function of putative carrageenan-active enzymes. This will lead to a deeper understanding of both carrageenan biosynthesis and degradation as it occurs in the natural environment.

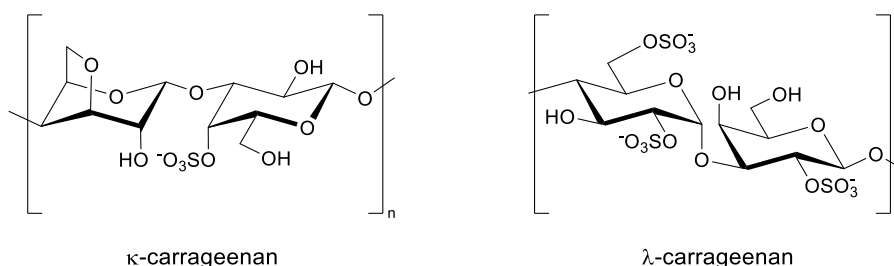


Figure 1. Two common subtypes of carrageenan, kappa (κ) and lambda (λ).

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