

Functionalized Glycosaminoglycans

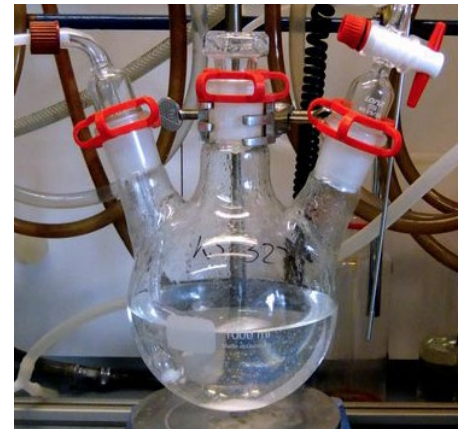
Transfer Offer

Glycosaminoglycans (GAG) are linear, complex polysaccharides and form a major component of the extracellular matrix (ECM). They are found in connective tissue and cartilage and act as water storage in the vitreous body of the eye (hyaluronic acid). Sulfated GAGs, such as chondroitin sulfate and heparin show high biological activity (e.g. antiviral, anticoagulant) and interact in many ways with certain mediators (e.g. growth factors). The targeted chemical modification of the biocompatible, sustainable and polyfunctional GAGs allows the adaptation properties (chemical-physical and biomedical) to individual customer requirements.

Technology

At INNOVENT, a variety of methods for the targeted chemical modification of GAGs has been established:

- Specific adjustment of molecular weight by various degradation methods (thermal, enzymatic, oxidative)
- Selective sulfation with adjustable sulfate-group content
- Introduction of cross-linkable groups ((meth)acrylates, alkyne groups), further anionic functions (carboxy alkyl groups) or amino groups
- Introduction of marker groups (e.g. fluorescent dyes, biotin)
- Production of electrospun hydrogel nonwovens
- Extensive analytics for quality management



Chemical modification of hyaluronic acid

Advantages and Application Possibilities

- Wide range of applications in medical technology and life science
- Generation of artificial ECM (aECM) with collagen and various functionalized GAGs
- Formation of three-dimensional hydrogels for soft tissue regeneration
- Use of hydrogels for wound care, local drug release and as protein or cell carriers
- Use of swollen polymeric GAG gels in cosmetic industry and surgery



Liophilized hyaluronan derivative

State of Development/Equipment and Property Rights

The synthesis of functionalized GAGs is established at INNOVENT on a gram scale. Larger quantities can be provided on request.

Comprehensive investigations of cell biological properties are carried out mainly as part of the DFG-funded Collaborative Research Centre Transregio 67 (until 2021).

Own patents are available. Further patent applications for special applications in life science, medicine and cosmetics are possible.

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Mitglied der



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