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## DMTMM-mediated amidation of alginate oligosaccharides aimed at modulating their interaction with proteins

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### Highlights:

- DMTMM promoted efficient amidation of alginate oligosaccharides (AOS)
- AOS were functionalized with amino acids and carbohydrates
- Grafting conferred improved stability to AOS against alginate lyases
- Mannose-grafted AOS exhibited multivalent inhibition of Con A lectin

### Abstract

Alginate oligosaccharides (AOS) with a weight average molecular weight of 5 kDa were efficiently amidated with amino acids and carbohydrates in aqueous media in the presence of 4- (4,6- dimethoxy- 1,3,5- triazin- 2- yl)- 4- methylmorpholinium chloride (DMTMM). Here, alanine, leucine, serine, as well as mannose and rhamnose, were amidated at high yields with a good control of the degree of substitution (DS). Amino acid- and carbohydrate-grafted AOS showed improved stability against degradation by alginate lyases having different specificities. This enzyme resistance was correlated with the DS: hydrolysis was reduced by 60 to 70% for low DS (0.1), whereas AOS with DS ranging from 0.4 to 0.6 remained unhydrolyzed.

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