



### University of Groningen

Carbohydrate production by phytoplankton and	degradation in the marine microbial food web
Alderkamp, Anne-Carlijn	

IMPORTANT NOTE: You are advised to consult the publisher's version (publisher's PDF) if you wish to cite from it. Please check the document version below.

Document Version Publisher's PDF, also known as Version of record

Publication date:

Link to publication in University of Groningen/UMCG research database

Citation for published version (APA):

Alderkamp, A-C. (2006). Carbohydrate production by phytoplankton and degradation in the marine microbial food web s.n.

Copyright

Other than for strictly personal use, it is not permitted to download or to forward/distribute the text or part of it without the consent of the author(s) and/or copyright holder(s), unless the work is under an open content license (like Creative Commons).

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

Downloaded from the University of Groningen/UMCG research database (Pure): http://www.rug.nl/research/portal. For technical reasons the number of authors shown on this cover page is limited to 10 maximum.

Download date: 10-02-2018

# Carbohydrate production by phytoplankton and degradation in the marine microbial food web

The research reported in this thesis was carried out at the Department of Marine Biology and the Department of Microbial Ecology, Centre for Ecological and Evolutionary Studies (CEES), University of Groningen, The Netherlands. The printing of the thesis was financially supported by CEES and the J.E. Jurriaanse foundation. Cover design: M. Karin de Boer, Groningen Titus Rudolphy, Drukaantwerk, Kampen Photos of *Phaeocystis* colonies were modified form originals provided by Maria van Leeuwe, Koeman en Bijkerk, and Stuart Whipple Printed by: Van Denderen b.v., Groningen

ISBN:

90-367-2605-9

### RIJKSUNIVERSITEIT GRONINGEN

## Carbohydrate production by phytoplankton and degradation in the marine microbial food web

#### **Proefschrift**

ter verkrijging van het doctoraat in de Wiskunde en Natuurwetenschappen aan de Rijksuniversiteit Groningen op gezag van de Rector Magnificus, dr. F. Zwarts, in het openbaar te verdedigen op vrijdag 12 mei 2006 om 14:45 uur

door

Anne-Carlijn Alderkamp

geboren op 30 december 1975 te Zwolle Promotores: Prof. dr. W.J. Wolff

Prof. dr. G.J. Herndl

Prof. dr. W.W.C. Gieskes

Copromotor: Dr. H. Bolhuis

Beoordelingscommissie: Prof. dr. P.G. Verity

Prof. dr. H.J. Laanbroek Prof. dr. ir. J.D. van Elsas



### **Contents**

Chapter 1	Carbohydrate production by phytoplankton and degradation in the marine microbial food web - The cycling of chrysolaminaran	9
Chapter 2	Dynamics in carbohydrate composition of <i>Phaeocystis pouchetii</i> colonies during spring blooms in mesocosms	17
Chapter 3	Photoacclimation modulates excessive photosynthetically active and ultraviolet radiation effects in a temperate and an Antarctic marine diatom	33
Chapter 4	Characterization of marine bacteria and the activity of their enzyme systems involved in degradation of the algal storage glucan laminarin	51
Chapter 5	Dynamics of prokaryote abundance and activity in the coastal North Sea during spring and summer	63
Chapter 6	The carbohydrates of <i>Phaeocystis</i> and their degradation in the microbial food web – a review	75
	References	93
	Summary	107
	Samenvatting	113
	Dankwoord	121
	Curriculum Vitae	123