A facile method for the extraction of sodium alginate from the algae

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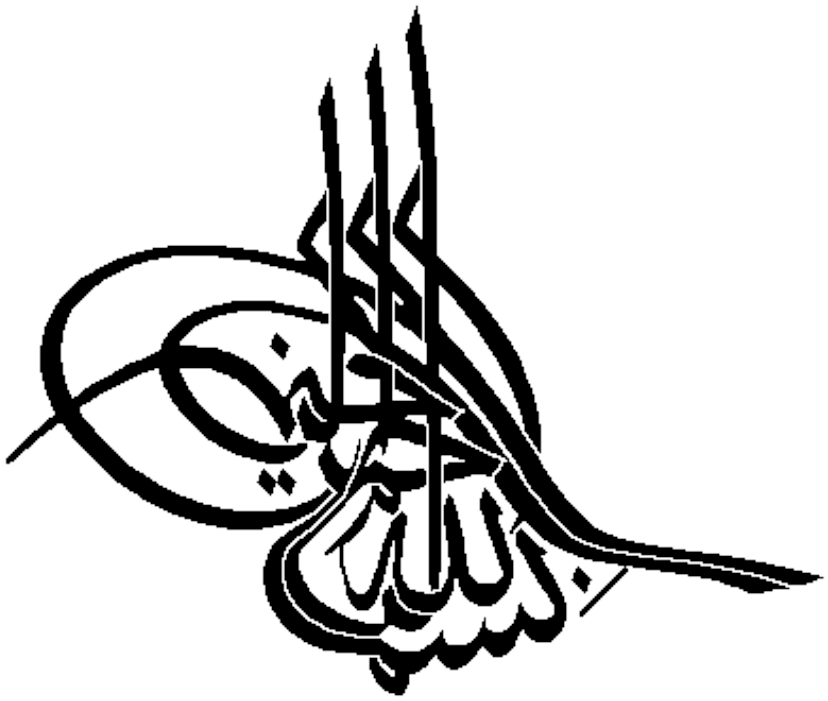

In the name of

Allah,

The most Compassionate,

The most merciful

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Certified that the research work contained in this thesis titled, **"A Facile Method for the Extraction of Sodium Alginate from the Algae"** has been carried out and completed by**, ID: 15004140026**. The quantum and the quality of the work contained in this thesis is adequate for the award of Degree of MS/M. Phil.

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This thesis is dedicated to all the people who never stop believing in me and who along with Allah, have been my

Father, Mother, Brother; Saddam Raza

and my dear fellow

Syed Ali Shan Hasan Gilani,

Without their love and support I could not complete this task.

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ABSTRACT

A natural polysaccharide sodium alginate was extracted from the algae collected from the fresh water resources near Okara, Pakistan using little amounts of cheap chemicals. This method proved to be very effective, less time and reactant consuming which made it economical. Water and ash content of extracted sodium alginate was determined which came out to be 16% for water and 31 % for ash. Then the sample of sodium alginate was characterized by FT-IR, SEM and XRD to explain its properties. In FT-IR spectra the peaks showed the presence of varoius functional groups. SEM images showed the surface morphology *i.e.* particles arrangement, shape, size etc. and XRD results showed that sodium alginate was not crystalline in nature but semi crystalline in nature. Similarly the value of intrinsic viscosity for sodium alginate was calculated to be 312 ml/g. This value of intrinsic viscosity was used to calculate the molecular weight of sodium alginate which came out to be 106.94 KDa. Sodium alginate obtained was of good quality and this process seemed to be economical for industry of sodium alginate.

CONTENTS

List of Figures

CHAPTER-1

Introduction

1.1: Overview

Marine algae which is too identified as macro-algae are eukaryotic species having photosynthetic properties that may be originate from coastlines with persistent vivacity. *Chlorophyta* known as green algae, *Phaeophyceae* known as brown algae, *Rhodophyta* also known as red algae are the three foremost macro-algae population agreeing with their structural colorations. Factors of environment, for example CO_2 supply, physiological status, pH, sunlight, salinity and temperature could affect the chemical conformation of the marine algae. Macro-algae may persist in severe environmental circumstances owing to diverse adaptation approaches. Physiology of macro-algae fluctuates because of the essential adaption mechanisms, and as a consequence, macro-algae yields dissimilar secondary metabolites in order to overcome diverse environments. Macro-algae may even sustain exceptionally great intensity of light or very small intensity of light in dissimilar habitats, for instance, arctic region and dessert.