МІНІСТЕРСТВО ОСВІТИ ТА НАУКИ УКРАЇНИ
СУМСЬКИЙ ДЕРЖАВНИЙ УНІВЕРСИТЕТ
МЕДИЧНИЙ ІНСТИТУТ

АКТУАЛЬНІ ПИТАННЯ ТЕОРЕТИЧНОЇ ТА КЛІНІЧНОЇ МЕДИЦИНИ

Topical Issues of Theoretical and Clinical Medicine

ЗБІРНИК ТЕЗ ДОПОВІДЕЙ
V Міжнародної науково-практичної конференції студентів та молодих вчених
(м. Суми, 20-21 квітня 2017 року)

Суми
Сумський державний університет
2017

Obtained from chitin chitosan has high molecular weight that significantly complicates its practical use. Therefore, the use of chitosan as biologically active compound requires its modification for molecular weight reduction.

We investigated some peculiarities of alkaline and acidic hydrolysis of chitosan. Degree of molecular weight reduction was estimated by determination of intrinsic viscosity of chitosan samples in 2% aqueous solution of acetic acid with addition of 0.2 M sodium acetate.

Research has shown that relation of intrinsic viscosity of chitosan samples from alkali concentration has extreme character, and the degree of polymer deacetylation elevates almost linearly.

During alkaline hydrolysis of chitosan, two processes were observed: chitin deacetylation and polymer hydrolysis. Parallel existence of these processes excluded possibility of obtaining of chitosan which standardized of both molecular weight and degree of acetylation.

Therefore, we investigated the acidic hydrolysis of chitosan. Significant reduction of chitosan' molecular weight is achieved with hydrolysis in 0.7 normality sulfuric acid solution. Reduction of chitosan' mass fraction from 10% to 4% led to the decrease of intrinsic viscosity of polymer almost two times.

Thus, reduction of chitosan' molecular weight by means of acidic hydrolysis is preferable because provide the possibility to receive polymer with different molecular weight but with standardized degree of deacetylation.

FEATURES OF RESTRUCTURING OF BIOMATERIALS BASED ON ALGINAT – ORTOPHOSPHAS CERAMICS IN BONE

Olga Smorodska

Prof., DS, Sukhodul L.F., Prof., MD Shyschuk V.D.

Sumy State University, Department of Biophysics, Biochemistry, Pharmacology and Biomolecular Engineering, Department of Orthopaedics and traumatology

Introduction: Advances in investigation of medical materials made it possible to expand the arsenal of biomaterials, that are widely used today, during reconstructive operations on the bones of the skeleton. Alumina ceramic materials are often used today. However, along with the positive qualities alumina ceramics has a number of drawbacks.

Investigation of material with pasty consistency – is one of the modern areas in medical materials science. A new direction - is a combination of ceramic material of biological agents that act biologically active connections - collagen, glycosaminoglycans, chitin and others. As the result material "Kolapol" and paste different tracks (Algipore, Bio-Oss and others.) were created. Combinations of hydroxiapatite with collagen or glycosaminoglycans activates bone regeneration. Search for new composite materials based on bioactive ceramics continues.

The aim of the study was to investigate bone regeneration and reconstruction of composites based on calcium phosphate ceramics morphologically, after their implantation into bone defects.

Materials and Methods: In resaerch physical methods, including defraction, morphological methods, histological methods, in vivo studies on white mice were used.

Results: Samples were obtained showing good results in biocompatibility. As well as good substitute properties. So, investigated biomaterials had high osteoconducted properties without violating the regeneration of the bone and not exhibiting toxic properties.

Conclusion: Biomaterial based on alginat – ortophosphas ceramics showed promising results in restoration of bone tissues and have to be put into medical practice.