WORLD JOURNAL OF PHARMACEUTICAL RESEARCH
SJIF Impact Factor 7.523
Volume 7, Issue 2, 91-97. Research Article ISSN 2277– 7105

CHARACTERIZATION OF THE COMBINATION OF CHONDROTIN SULFATE, CHITOSAN AND KAPPA CARERGEENAN USING THE IONIC GELATION METHOD FOR PAINFUL KNEE OSTEOARTHRITIS

Danni Ramdhani*[1], Anis Yohana Chaerunisaa[2] and Aneu Nur Utami[2]

[1]Department of Pharmaceutical Analysis and Medicinal Chemistry, Faculty of Pharmacy.

[2]Departement of Pharmaceutics, Universitas Padjadjaran, Jatinangor, Indonesia.

Article Received on
27 Nov. 2017,
Revised on 17 Dec. 2017,
Accepted on 07 Jan. 2018
DOI: 10.20959/wjpr20182-10713

***Corresponding Author**
Danni Ramdhani
Department of Pharmaceutical Analysis and Medicinal Chemistry, Faculty of Pharmacy.

ABSTRACT

Objective: Application of the use of chondroitin sulfate as an alternative medicine in addition to nonsteroidal antiinflammatory drugs has the ability to inhibit the development of osteoarthritis. The use of chondroitin sulfate in the form of nanoparticles can increase the bioavailability of the drug. This study aims to characterize the combination formula of condroitin sulfate, chitosan and kappa carrageenan. **Methods:** Preparation of formula consisting of 0.1% chitosan, 0.1% chondroitin sulfate and 0.05% kappa carrageenan at volume ratio of 10: 1: 1 were prepared by using ionic gelation method This method was based on the electrostatic interaction between opposite charges. Characterization of nanoparticles were performed by measuring pH, particle size, polydispersity index, zeta potential and examination of infrared spectrum. **Results:** The results showed that pH 3.1, an average particle size 582.9 nm, polydispersity index value of 0.324 and zeta potential value as much as -0.47 mV.

KEYWORDS: Chondroitin sulfate, chitosan, kappa carrageenan, anoparticles, Ionic gelation, characterization.

INTRODUCTION

In recent years, many studies have been conducted to determine the efficacy of glucosamine, a condrotin in the treatment of osteoarthritis of the knee (OA). Osteoarthritis is a degenerative joint condition causing pain, loss of function and often some degree of disability.[1] The