ABSTRACT

Determination of Galactomannan in Guar Gum Powder Using 3,5-Dinitrosalicylic Acid Reagent by Visible Spectrophotometry Method

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Guar gum is a type of gum that is often used by human in various fields such as the food industry, pharmacy and cosmetics. Guar gum contains galactomannan with a mannose backbone linked to galactose side chains, which are randomly placed on mannose backbone with an average ratio of 1:2 galactose to mannose. The structure of galactomannan consists straight chain of D-mannose unit linked together by β-1,4 glycoside linkage and D-galactose units are joined to it at each alternate position by an α-1,6 glycosidic linkage. The enzymatic hydrolysis of galactomannan can use the β-mannanase enzyme, which will cleave the β-1,4 linkage, and the α-galactosidase enzyme, which will cleave the α-1,6 linkage. With the addition of 3,5-dinitrosalicylic acid (3,5-DNS) reagent, there will be a reduction-oxidation reaction between D-mannose and D-galactose with 3,5-DNS reagent so that the concentration of galactomannan which is calculated from the reducing sugar content can be determined using Visible Spectrophotometric method. The results showed the concentration of galactomannan in guar gum powder was 24.00-862.92 mg/g.

Keywords: galactomannan, guar gum, enzymatic hydrolysis, Visible Spectrophotometry