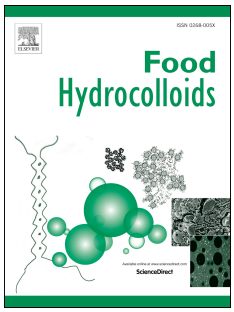
Accepted Manuscript



Chemical and physicochemical characterizations of the water-soluble fraction of the *Commiphora Africana* exudate

Abdellatif Dahi, Bah Mohamed-Lemine Abdellahi, Mohamed Fadel Deida, Nicolas Hucher, Catherine Malhiac, Frédéric Renou

PII: S0268-005X(17)31068-8

DOI: 10.1016/j.foodhyd.2017.10.032

Reference: FOOHYD 4119

To appear in: *Food Hydrocolloids*

Received Date: 20 June 2017

Revised Date: 22 September 2017

Accepted Date: 26 October 2017

Please cite this article as: Dahi, A., Mohamed-Lemine Abdellahi, B., Deida, M.F., Hucher, N., Malhiac, C., Renou, Fréé., Chemical and physicochemical characterizations of the water-soluble fraction of the *Commiphora Africana* exudate, *Food Hydrocolloids* (2017), doi: 10.1016/j.foodhyd.2017.10.032.

Chemical and physicochemical characterizations of the water-soluble fraction of the *Commiphora Africana* exudate

Abdellatif Dahi[a], Bah Mohamed-Lemine Abdellahi[a,b], Mohamed Fadel Deida[b], Nicolas Hucher*[a], Catherine Malhiac[a], Frédéric Renou[a]

[a]Normandie Univ, UNILEHAVRE, FR 3038 CNRS, URCOM, 76600 Le Havre, France.
[b]University of Nouakchott, Faculty of Sciences and Technics, LCME, Nouakchott, Mauritania.

* Corresponding author. N. Hucher, URCOM, Université le Havre Normandie, 25 rue philippe Lebon - BP 1123 76063 le Havre cedex FRANCE - Tel.: +33 232744399; fax: +33 232744391. E-mail address: nicolas.hucher@univ-lehavre.fr

Abstract

The present study focuses on the chemical and physical characterization of the water-soluble fraction of the C*ommiphora Africana* exudate. The chemical analysis proved that this fraction is mainly composed of carbohydrates and hydrophobic amino acids. Size exclusion chromatography (SEC) revealed the presence of three distinct polysaccharide populations that are all bonded to protein. In addition, both SEC and rheology demonstrated that the gum owns highly compact structure that suggests an AGP-like polymer. *commiphora Africana* gum exhibits excellent surface activity at concentration 2 orders of magnitude lower than the reference, acacia gum and was attributed to the fact that the three populations contribute to the surface tension lowering. This remarkable property has been confirmed by preliminary experiments on model emulsions and suggests a very promising application in formulation.

Keywords

Commiphora Africana exudate; water-soluble fraction; chemical composition; Arabinogalactan-Protein-like polymer; Surface activity; compact structure

1. Introduction

Hydrocolloids own many industrial applications in pharmaceutic, cosmetic or food products. Their applications are based on their functional properties, for example, their ability to form viscous solutions at low concentration, or their ability to stabilize emulsions. The possible surface activity of several food gums has been studied in order to evaluate their