Some physicochemical properties of sage (Salvia macrosiphon) seed gum

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1. Introduction

Salvia is native to the northern Mediterranean coast. Distributed worldwide and widely cultivated, it is hardy north into Canada. Salvia derives from the Latin solvere, which means salvation (“to feel well and healthy, health, heal”), the verb related to salus (health, well-being, prosperity or salvation); referring to the herb’s healing properties (Super herbs, 2013; Sutton, 2004).

Salvia is the largest genus of plants in the mint family, Lamiaceae, with approximately 700-900 species of shrubs, herbaceous perennials, and annuals. It is one of several genera commonly referred to as sage, which has many uses: culinary, aromatic, ornamental, cosmetic, craftwork, as a dye, and as a preservative (Clebsch & Barner 2003; Sutton, 2004). Sage has also antibacterial properties, making it a natural preservative for meat, poultry, fish, and condiments. Recently, sage extracts have been made into flavorless antioxidants to increase the shelf life of foods (Super herbs, 2013).

Sage seed (Salvia macrosiphon) is an endemic small rounded seed, which quickly produces a transparent mucilaginous gum as it is wetted by water. It has been traditionally used for pharmaceutical and food applications (Razavi, Bostan, & Rahbari, 2010). The optimum conditions of sage seed gum (SSG) extraction have been previously determined by Bostan, Razavi, and Farhoosh (2010). Steady shear flow properties at different temperature and concentration showed higher low-shear rate viscosity, yield stress and strong shear thinning characteristics for SSG compared to the commercial ones like xanthan, guar and locust bean gums (Razavi, Taheri, & Quinchia, 2011). Viscoelastic behavior of SSG has been recently investigated as a function of gum concentration by measuring the transient (in-shear structural recovery & creep/ recovery tests) and dynamic (stress and frequency sweeps) rheological properties (Razavi, Taheri, & Sunchez, 2013). Mechanical spectra obtained by frequency sweep tests showed that the SSG at all concentrations ranging from 0.5 to 2% (w/w) exhibited weak gel