

Title Effect of a sodium caseinate edible coating on berry cactus fruit (*Myrtillocactus geometrizans*) phytochemicals

Author Julieta Correa-Betanzo, Jissy K. Jacob, Cristina Perez-Perez and Gopinadhan Paliyath

Citation Food Research International, Volume 44, Issue 7, August 2011, Pages 1897-1904

Keywords Berry cactus fruit (*Myrtillocactus geometrizans*); Edible coating; Betalains; Polyphenols; Antioxidant; MALDI-TOF-MS

Abstract

Berry cactus fruit (*Myrtillocactus geometrizans*) is an endemic cactus fruit from Mexico and is a rich source of phytochemicals, primarily betacyanins, betalains and polyphenols. However, only a few studies have been performed to evaluate the changes in the levels of these compounds in berry cactus fruits during post harvest storage. Berry cactus fruits were treated with a sodium caseinate (Na-Cas) based edible coating plasticized with sorbitol (S) and glycerol (G), and their phytochemical contents were evaluated. Control (C), Na-Cas(S) and Na-Cas(G) fruits were packed in clam shell boxes and stored at 5 ± 1 °C for 15 days. Betacyanins, betaxanthins, total polyphenols, their *in vitro* antioxidant activity, as well as α -amylase and α -glucosidase inhibitory activities were estimated during storage at 0, 7 and 15 days. Polyphenol levels declined from an initial 3500 mg/100 g of dry fruit by over 50% after 7 days of storage. By contrast, total betalain levels remained steady during the 15 days of storage. Antioxidant capacity, as measured by DPPH (1,1-diphenyl-2-picryl-hydrazyl) radical scavenging, was maintained in berry cactus fruit extracts during storage. Edible coatings did not have any effects on the antioxidant capacity. Berry cactus polyphenols were also strong inhibitors of α -amylase and α -glucosidase activities. Portulacaxanthin II and III, indicaxanthin, vulgaxanthin I and III, 3-methoxytyramine-betaxanthin, arginine-betaxanthin, betanidin, dopa-betaxanthin, betanin, phyllocactin, and three other unknown compounds were identified as betalains. As well, a catechin derivative, epicatechin, epigallocatechin, kaempferol, myricitrin, quercetin 3-O- β -glucoside, isorhamnetin 3-glucoside and a kaempferol diglycoside were identified as polyphenols.