



Carob

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Roasted Carob Pods: Valued since biblical times as a nutritious, naturally sweet food, carob pods are often used today as a healthy substitute for chocolate. Carob's anti-diarrheal properties were discovered by a Spanish physician who observed that children of the poorer class ate large quantities of carob pods and had less digestive problems than children of the wealthy, even though their living conditions were less hygienic. Studies since have confirmed carob's effectiveness in resolving infantile diarrhoea safely.

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Unlike commercial chocolate carob is low in Saturated Fat, Cholesterol and Sodium. It is also a good source of Riboflavin (vitamin B2), Calcium, Potassium, Copper and Manganese, and is a very good source of Dietary Fibre. Roasted Carob Pods: Valued since biblical times as a nutritious, naturally sweet food, carob pods are often used today as a healthy substitute for chocolate. Carob's anti-diarrhoeal properties were discovered by a Spanish physician who observed that children of the poorer class ate large quantities of carob pods and had less digestive problems than children of the wealthy, even though their living conditions were less hygienic. Studies since have confirmed carob's effectiveness in resolving infantile diarrhoea safely. Carob is high in calcium and Vitamin A and is rich in dietary fibre (26%) and polyphenols (21%) - those same anti-oxidant compounds found in tea that are receiving so much media attention (see below).

Agric Food Chem. 2002 Jan 16, 50(2), p 373-7: We extracted polyphenols from carob (*Ceratonia siliqua* L.) pods, and evaluated the in vitro antioxidant activity of the crude polyphenol fraction (CPP). The total polyphenol content in CPP determined by the Folin-Ciocalteu method was 19.2%. The condensed tannin content determined by the vanillin and proanthocyanidin assay systems was 4.37% and 1.36%, respectively. Beta-Carotene bleaching, 1,1-diphenyl-2-picrylhydrazyl (DPPH) free radical scavenging, inhibition of lipid peroxidation by the erythrocyte ghost, and microsomal assay systems were used to evaluate the antioxidant activity. CPP showed a stronger inhibitory effect against the discoloration of beta-carotene than other polyphenol compounds such as catechins and procyanidins. CPP had weaker antioxidant activity in the DPPH free radical scavenging, the erythrocyte ghost, and microsomal systems than authentic polyphenol compounds at the same concentrations. The activity adjusted by the polyphenol concentration was, however, comparable to that of authentic polyphenol

1.) *Agric. Food Chem.*, 2002 Jan 16, 50(2), pp 373-7.



compounds. Considering most carob pods are discarded and not effectively utilized at present, these results suggested that carob pods could be utilized as a functional food or food ingredient.

J. Food Chem Toxicol. 2003 Dec, 41(12), p 1727-38: Carob fibre was found to contain a rich variety of phenolic antioxidants. A total of 24 polyphenol compounds were identified with a yield of 3.94 g/kg (dry weight). The profile was dominated by gallic acid in various forms: free gallic acid (42% of polyphenols by weight), gallotannins (29%), and methyl gallate (1%), while simple phenols, mainly cinnamic acid, made up about 2% of the total. Flavonoids represented 26% of the polyphenols, and the major components were identified as the glycosides myricetin- and quercetin-3-O-alpha-L-rhamnoside (ca. 9% and 10%, respectively). These data indicate that carob fibre is rich in both amount and variety of phenolic antioxidant substances, and its inclusion in the diet may have chemopreventive properties.

OTHER STUDIES: Qualitatively, carob tannins' chemical degradation products consist of flavanols-3 and their gallate esters [(+)catechin, (-)epicatechin, (-)epigallocatechin, (-) epigallocatechin gallate, (-)epicatechin gallate] of flavanodiols-3,4 (delphinidin, cyanidin, pelargonidin) and other phenols as phloroglucinol, pyrogallol, catechol and gallic acid. evaluating the effects of the four carob pod fractions on cell viability and proliferation, after exposure to several human antigens for T-cell cultures (extracted from patients who suffered from leukaemia). Consumption of 15 g/d of a carob fibre preparation over 6 weeks lowered LDL cholesterol by 11.0 % in hypercholesterolemic subjects. This suggests that carob fibre may be effective in the dietary treatment of hypercholesterolemia. Recent studies have also shown that dietary fibre rich in polyphenols may (1) lower the glycemic index of food and (2) have anti-inflammatory effect. If carob fibre shows similar effects, it may be of special interest in the treatment of the metabolic syndrome (C. Koebnick, H., J. F. Zunft, Bergholz-Rehbrücke). In two recent human studies, carob fibre was shown to have a positive effect on human cholesterol levels, in particular, reducing LDL (low-density-lipoprotein, bad cholesterol) cholesterol levels, as well as improving the LDL/HDL (high-density-lipoprotein, good cholesterol) ratio. Unlike some other dietary fibres, carob fibre contains water-soluble and water-insoluble polyphenols, which exhibit considerable natural antioxidative activity and can contribute to a more favorable balance between free radicals (oxidants) and antioxidants.

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Hambleton Organic Carob Powder — 200g for £2.10

Cotswold Carob Powder — 250g for £0.83p

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