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Influence of fruit intake and antioxidants on the prevention of opacities of the lens

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The WHO considers cataracts to be the leading cause of avoidable blindness worldwide. Cataracts develop as a result of protein glycation, which takes place when proteins react with sugars, by cross-link formation and by oxidative processes[(1)]. Such end products of glycation alter proteins, DNA and lipids, modifying their chemical properties and causing a colour loss of the lens to yellow or brown, which impairs vision. Given the importance of oxidative processes in the development of cataracts, the putative role of antioxidant agents in its development have been investigated.

The aim of the present study was to assess the possible protective effect of the different antioxidant agents present in fruit on the development of opacities of the lens relative to age.

The subjects were a random sample (one in every three individuals attending a community pharmacy) of seventy-four male and female patients with a mean age of 59 (range 45–80) years. Subjects completed a self-administered questionnaire to assess lifestyle status, as well nutritional habits with a particular focus on the fruit intake.

N-acetyl-serotonin, a precursor of melatonin, appears to be effective in preventing damage to the lens caused by UVA radiation, both for its ability to capture free radicals and for its antioxidant properties. Vitamin E also has a protective effect against radiation-induced cataracts by reducing oxidative stress. In addition, a similar effect has also been observed in relation to cataracts induced by tobacco smoking. N-acetyl-carnosine plays an important role as an antioxidant against free radicals (superoxide, hydroxide) both in the lipid phase of the cell membranes of the lens and in the aqueous membrane. It has also been suggested that vitamin C decreases cataract risk relative to age among middle-aged Japanese. After oral administration of a combination of antioxidant micronutrients (β-carotene, vitamin C and vitamin E) for a 3-year period a slight deceleration of cataract progression relative to age was observed. A majority of patients were consuming fruit regularly (93.2% *v.* 6.8%; Table). Of those consuming fruit, 18.8% showed opacities of the lens (P=0.949), with a relative risk of 0.94. Thus, it could be considered that consuming fruit may provide a mild protective effect against developing opacities of the lens. To date, there are very few studies showing the protective effect of antioxidants on the development of cataracts in human subjects[(2)]. However, it has been suggested that both natural and artificial antioxidants could have a protective effect in the prevention of cataracts in the early stages of oxidative damage to the lens.

Table. Relationship between fruit intake and development of opacities of the lens

			Lens opacity		
			No	Yes	Total
Fruit intake	No	*n*	4	1	5
		% No-fruit consumers	80.0	20.0	100
		% Total sample	5.4	1.4	6.8
	Yes	*n*	56	13	69
		% Fruit consumers	81.2	18.8	100
		% Total sample	75.6	17.6	93.2

The present results suggest that antioxidants from fruit could provide some protective effects in the prevention of opacities of the lens.

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