

Title Composition, bioavailability and bioconversion of carotenoids to vitamin A in 'Ataulfo' mango fruit

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Abstract

'Ataulfo' mango (*Mangifera indica* L.) is one of the most produced and consumed mango in Mexico, and also becoming important in other markets such as USA. It is assumed that 'Ataulfo', as other mango cultivars, is a good source of dietary β -carotene, however its carotenoid composition has not been determined. In the present work, the content of β -carotene was measured by HPLC during the ripening process and was related with the internal and external color values. The lowest and highest content of β -carotene were 0.25 and 3.97 mg/100 g, respectively. Equations, with high determination coefficients ($R^2= 0.86-0.94$) to predict the content of β -carotene on the basis of internal and external color values were obtained. The pulp of , 'Ataulfo' mango at several stages of ripening was subjected to simulated in vitro digestion in presence or absence of a chicken baby food (CBF) as a fat source, and the transference of β -carotene to the micellar fraction (MF) was followed by HPLC. Only a slight increase in micellar β -carotene was detected when fruit at advanced ripening stages were tested in the digestive reactions without fat. Fat addition increased up to 3.3 fold the transference of β -carotene to the ME The MP from digestions of fully ripened fruit and CBP were used to test the uptake of micellarized β -carotene by monolayers of Caco-2 cells, which incorporated the 16.9 % of β -carotene contained in the test medium. Wistar male rats were depleted of vitamin A over 12 weeks and then were fed fresh carrot or 'Ataulfo' mango for 2 weeks. Both test meals provided the same amount of β -carotene during the repletion period. At the end of the experiment, retinol accumulation in the liver was found to be higher in the group fed with 'Ataulfo' mango than in the group fed with carrot, suggesting that β -carotene from 'Ataulfo' mango was more bioavailable than the β -carotene from carrot.