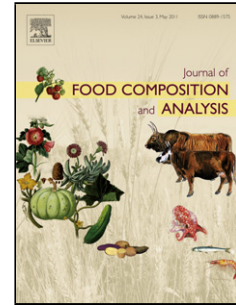


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In vitro bioaccessibility of lutein from cupcakes fortified with a water-soluble lutein esters formulation.

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Highlights

Lutein esters are stable to baking process during production of fortified cupcakes

Activity of pancreatic lipase towards lutein esters was low after *in vitro* digestion

The efficiency of xanthophyll bioaccessibility reached significant values (30-80%)

Abstract

Bioaccessibility is a key factor in the successful development of functional foods, particularly when the food matrix is quite different from that of the natural source(s) of the target bioactive ingredient. Although staple foods contain xanthophylls, the amounts are relatively low to achieve the desired beneficial effect in health, and during baking degradative reactions may contribute to reduce such amounts. The addition of water-soluble formulation of lutein as an ingredient in the cupcake recipe to fortified the amounts of this xanthophyll in the final product, showed satisfactory stability degree and resistance to the baking process. Indeed, the *in vitro* bioaccessibility reached adequate efficiency levels, ranging 30-80% of the initial lutein content. Activity of pancreatic lipase over lutein esters was low, but the hydrolysed lutein was completely incorporated into micelles. Indeed, the main micellar lutein

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