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Antioxidative Effect of Coffee Melanoidins

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Summary

Melanoidins from roasted coffee show strong antioxidative effects depending on the way the coffee is treated. In this study it was possible to evaluate and describe the antioxidative potential of coffee melanoidins and to obtain an idea of the chemical source of this effect. The influence of roasting parameters was measured and quantified. Medium roasted coffee showed the strongest potential. Polymer Maillard reaction products have a remarkable antioxidative potential though it is exceeded by low molecular phenolcarboxylic acids. The contribution of free chlorogenic acid isomers to the total antioxidative effect of roasted coffee equals 25% depending on the content. Despite the decomposition of chlorogenic acids in coffee during the roasting process, an increase of the antioxidative capacity is observed.

Introduction

Coffee is one of the most popular beverages in the world (coffee consumed in Germany 2000: 6.7kg per person [1]). The major compounds related to the dry mass of roasted coffee are the melanoidins. They play an important role in the development of the coffee aroma during the roasting process. While the chemical structure of melanoidins in general is still mainly unknown, some interesting qualities of these substances have already been described. Different authors have postulated the antioxidative potential of melanoidins and the possible physiological effect that might occur [2, 3, 4]. Former investigations were mainly focussed on the ability of melanoidins to improve the oxidative stability of foodstuff. In our study, the radical scavenging ability was measured and described by using a modified TEAC-test [5].....