CAKE AROMA PROFILE AS AFFECTED BY WHEAT FLOUR REPLACEMENT WITH CAROB FLOUR

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Cakes are baked products highly appreciated by the consumers worldwide. Carob flour, produced by grinding the seedless carob pods, is an interesting source of insoluble fiber and compounds with antioxidant activity. Given the fact that it is caffeine and theobromine-free, it is also considered as a natural cocoa substitute that could be incorporated in many food formulations. The partial substitution of wheat flour by carob flour could be an alternative to supply the demand of healthier products with sensorial characteristics comparable to traditional ones.

In the present work the effect of carob flour addition on the aroma profile of pound cakes was compared to the aroma profile of cocoa powder-containing cakes as well as cakes prepared only with wheat flour (control). Headspace solid-phase microextraction (HS-SPME) combined with gas chromatography–mass spectrometry was employed and the SPME fiber coated with CAR/PDMS was used to extract volatiles from the headspace of the cake powdered samples (60 min at 60 °C under controlled stirring).A total of 125 volatile compounds were identified, i.e. 75, 108 and 105 in the control, carob flour and cocoa powder-containing cakes, respectively. Sixteen out of all the extracted volatiles were identified only in carob flour-containing cakes. From a qualitative point of view, the volatile profiles of carob and cocoa-containing cakes were very similar. However, from a quantitative point of view, the cakes differed significantly with the carob flour-containing one being notably richer than that of the other two samples.