

Key Odorants of Roasted Coffee: Evaluation, Release, Formation

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SUMMARY

An aroma model very close to the aroma profile of a sample of medium roasted Arabica coffee from Colombia was developed by using 27 odorants, which had been both screened in preceding dilution experiments and quantified. Omission experiments indicated 2-furfurylthiol (FFT) as the outstanding odorant of roasted coffee. In addition, 4-vinylguaiacol, several alkylpyrazines, furanones, acetaldehyde, propanal and the malty smelling *Strecker* aldehydes are all responsible for the unique flavor of roasted coffee. FFT and the above mentioned odorants mask the peasy odor of 2-isobutyl-3-methoxypyrazine which originates from the raw material and is stable during roasting. The release of important odorants during open storage of ground coffee was also determined, e.g. the losses of methanethiol and acetaldehyde within 15 min amount to 43% and 39%, respectively. In contrast, only 1% of the low volatile furanones evaporate within 30 min. Model experiments indicated that in the roasting process FFT is produced by reactions of cysteine with arabinose, which originates from polysaccharides. Bound thiols including FFT were liberated from roasted coffee by a treatment with dithiothreitol. This suggests that they are linked by disulfide bonds to cysteine and cysteine containing peptides and proteins.