

Characterization of the key aroma constituents in fry breads by means of the sensomics concept

ABSTRACT

The key aroma constituents in the volatile fractions isolated FROM two differently processed fry breads by solvent-assisted flavor evaporation were characterized by an aroma extract dilution analysis (AEDA). Twenty-two compounds were identified with flavor dilution (FD) factor ranges of 2–516. Among them, 13 compounds ($FD \geq 16$) were quantified by stable isotope dilution assays and analyzed by odor activity values (OAVs). Of these, 11 compounds had $OAVs \geq 1$, and the highest concentrations were determined for δ -decalactone and 2,3-butanedione. Two recombination models of the fry breads showed similarity to the corresponding fry breads. Omission tests confirmed that aroma-active constituents, such as δ -decalactone (oily/peach), 2-acetyl-1-pyrroline (roasty/popcorn-like), 3-methylbutanal (malty), methional (baked potato-like), 2,3-butanedione (buttery), phenyl acetaldehyde (flowery), (E,E)-2,4-decadienal (deep-fried), butanoic acid, and 3-methylbutanoic acid, were the key aroma constituents of fry bread. In addition, 3-methoxy-4-vinylphenol (smoky) and 4-hydroxy-2,5-dimethyl-3(2H)-furanone were also identified as important aroma constituents of fry bread.

Keyword: Aroma constituents; Aroma extract dilution analysis; Fry bread; Odor activity values; Solvent-assisted flavor evaporation