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Title: Effect of pH and Water Activity in Generation of Selected Meaty Aroma Compounds in a Meat Model System

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Abstract: Longissimus dorsi post rigor minced beef meat was washed repeatedly with 0.02 M phosphate buffer (pH 6.8) to obtain pigment-free muscle fibers. The resultant muscle fiber was freeze dried and used as a meat model system. The results were compared with or without an aqueous model system containing a mixture of cysteine, thiamine and ribose reaction mixture. Gas chromatography-Mass spectrophotometry was used to study the effect of pH and water activity on the generation of volatiles in model systems. Seven sulphur-containing meaty aroma volatiles were identified in the meat fiber model system by odour port analyser and the generated mass spectra. The generation of volatile in reaction mixture as well as in meat fiber model system were strongly influenced by pH. The intensity of 2-methyl tetrahydrothioph-ene-3-one was low ($p < -0.05$) at lower pH. The generation of 2-methyl-3-furanthiol and bis-(2-methyl-3-furyl) was more ($p < -0.05$) in reaction mixture model system at a pH 5.5 and 6.5 than at lower pH. However, the increase in generation of 2-methyl thiophene in model systems studied was dependent ($p < -0.05$) on the increase of pH. The volatiles, 2-methyl-4-5-dihydrothiophene, 2-methyl-3-(methylthio) furan and 2-methyl-3-thiophenethiol were not detected at low pH in a meat fiber model system. However, their generation in reaction mixture and meat fiber containing reaction mixture system was observed. The formation of 2-methyl-3-furanthiol and bis-(2-methyl-3-furyl) was favoured ($p < -0.05$) by higher a_w whereas, the formation of thiophene was maximum at a_w 0.80. At higher a_w , an inverse relationship between a_w and quantity of thiophene was observed.

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