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# **Czech J. Food Sci.**

**Xu H., He W., Liu K.,  
Gao Y.:**

# Effect of pressure on the Maillard reaction between ribose and cysteine in supercritical carbon dioxide

Czech J. Food Sci., 28 (2010): 192-201

An aqueous ribose-cysteine model system, heated at 140° C under supercritical carbon dioxide (SC-CO<sub>2</sub>) and supercritical nitrogen (SC-N<sub>2</sub>), was investigated with emphasis on the formation of volatile compounds. In general, SC-CO<sub>2</sub> facilitated the overall intermediates accumulation while suppressing the advanced stage of browning. 3-Methyl-1, 2-dithian-4-one increased with increasing SC-CO<sub>2</sub> pressure, and was always more concentrated than in the case of SC-N<sub>2</sub>-treatment. The formation of thiols, disulfides, and formyl substituted thiophenes was also promoted in SC-

CO<sub>2</sub>-treated reaction products, while the effect of high pressure on the individual components followed different patterns. The reversible pH decrease and reinforced acid-base catalysis of 2, 3-enolisation by SC-CO<sub>2</sub> could attribute to the decreased browning and higher amounts of most intense meaty aromatic compounds.

### **Keywords:**

supercritical carbon dioxide (SC-CO<sub>2</sub>);  
pressure; Maillard reaction; ribose;  
cysteine; volatiles

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