Title Effect of low storage temperature on some of the flavour precursors in garlic (*Allium sativum*)

Author Jill Hughes, Hamish A. Collin, Angela Tregova, A. Brian Tomsett, Richard Cosstick and Meriel G. Jones

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Abstract

Garlic (*Allium sativum*) cloves were stored at ambient temperature and 4 °C for periods up to six months to establish the effect of position of the individual clove within the bulb and of low storage temperature on the composition of several flavours precursors and other organic sulphur compounds, measured by gradient High Pressure Liquid Chromatography. Levels of alliin, γ glutamyl allyl cysteine sulphoxide and γ glutamyl isoallyl cysteine sulphoxide were statistically significantly higher in outer than in inner cloves. There was no statistically significant change in levels of alliin, the major flavour precursor, in cloves stored at 4 °C, remaining in the average range 17.5±3.8–39.1±7.5 mM. However, isoalliin increased significantly during storage at 4 °C, rising from an average 0.6±0.2 mM (outer cloves)—0.7±0.4 mM (inner cloves) to 7.1±1.7 mM (outer cloves)—4.1±0.7 mM (inner cloves). A decline in other sulphur-containing compounds, most likely to be the peptides γ-glutamyl allylcysteine sulphoxide and γ-glutamyl isoallylcysteine sulphoxide, occurred at the same time and possibly contributed to the increase in the flavour precursor compounds. The degree of chemical changes during storage will be of interest to the food and pharmaceutical industries.