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Analysis of glutamic acid content of selected vegetables, for the development of a natural flavour enhancer as a replacement for monosodium glutamate

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Glutamic acid, one of the most common amino acids, is a constituent of almost all proteins. Although a non-essential amino acid, it is an important source of nitrogen and may act to conserve essential amino acids against depletion. Glutamate occurs naturally in varying amounts in many foods including milk, meat, fish, poultry, and vegetables. There tends to be a high free glutamate content in foods that have a relatively strong flavour. The superior flavour of young, freshly harvested vegetables as compared to older samples may be due to higher glutamate content. This study is a part of a research project where the glutamic acid content of four vegetables is analyzed in order to develop a natural flavour enhancer by identifying the best proportions to be mixed. Agilent 1260 Infinity HPLC equipped with a quaternary gradient pump, Diode array detector & Thermostated column compartment was used to achieve chromatographic separation. The chromatography analysis carried out to determine the glutamic content revealed that tomato has the highest content of glutamic acid with an average of 95.88 mg/100g while mushroom contained the lowest of 23.46 mg/100g. In addition garlic also contains a significant amount of glutamic acid with a value of 50.98 mg/100g. As far as the mixed samples are concerned, sample 767 where tomato, mushroom, carrot and garlic powder has been mixed with 2g, 2g, 1g, 1g per sample gave the highest result for glutamic acid content of 67.14 mg/100g. Along with an intention of replacing the consumption of MSG, the results of this study makes known that formula 767 would be a better combination to develop the said natural flavour enhancer.

Keywords:MSG, Glutamate, Chromatography

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