Abstract

pH is an important indicator of banana fruit quality, since it is involved in the perception of sourness. To understand which chemical components drive the pH in banana pulp, a set of equations (conservation, dissociation, and ionic balance) representing acid/base reactions was use a model. We assumed that the fruit pulp is a concentrated aqueous solution in which weak acids are partly in free form and partly neutralized by mineral cations. The weak acids used in the model were malic, citric, oxalic, isocitric, and phosphoric acids. Mineral cations were represented by the amount of potassium (the main cation in banana pulp) which forms salts with weak bases, but excluding salts associated with chloride (the main anion in banana pulp). Acids and chloride were analysed by ionic chromatography, potassium by atomic absorption spectrophotometry. The pH was calculated based on the known acid and mineral composition of the 46 banana samples from 17 cultivars. The model was validated by comparing measured and calculated pH. With a root mean square error of 0.2, we can consider that the pH was well predicted.