Title Respiration Model for Fresh-cut Products as a Function of Degree of Cutting

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Abstract

To extend Michaelis-Menten type respiration model for fresh-cut products so as to possible to describe the cutting effect, the respiration rates of four sizes of green pepper, eggplant and cucumber slices at different partial pressures of O_2 were determined using a flow through system method at 20°C. Degree of cutting (*D*-value) was quantified by determining the surface area created through cutting per unit weight of the product. CO_2 production of each product decreased in response to decreasing O_2. In addition, increases in *D*-value resulted in increased respiration rates. Michaeli-Menten type equation was fitted to each data set of different cutting sizes by nonlinear least square method, and the parameters K_m and V_{max} were estimated, individually. With an increase in *D*-value, K_m decreased and V_{max} increased, but at higher rage of *D*-value, both parameters seemed to approach constant values. The dependences of both these parameters on *D*-value dould be expressed by exponential equations. The extended Micahelis-Menten type respiration madel including these equations coule provide a good prediction of respiration rate of fresh-cut products at any O_2 partial pressures and degrees of cutting.