

Title Effects of combined treatments of high pressure, temperature and antimicrobial products on germination of mung bean seeds and microbial quality of sprouts

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Abstract

The effects of several combinations of pressure, temperature and two antimicrobial agents, hypochlorite and carvacrol, applied separately on mung bean seeds, on their germination capability and on native microbial loads of sprouts developed from treated seeds, was studied by using response surface methodology (RSM). Seed viability decreased as pressure increased, at all concentrations of both hypochlorite and carvacrol. Enhanced reductions of total aerobic mesophilic bacteria, total and faecal coliforms and yeast and moulds populations were observed as pressure and hypochlorite/carvacrol concentrations increased. The optimal treatment at 250 MPa of seeds soaked in 18000 ppm and 1500 ppm of calcium hypochlorite and carvacrol, respectively, maintained an acceptable germination rate (80% and 60%, respectively) and improved the microbial quality of the respective sprouts with reductions of more than 5 log cfu/g. These reduction levels can be considered a preservative goal for industrial mung bean sprout production.