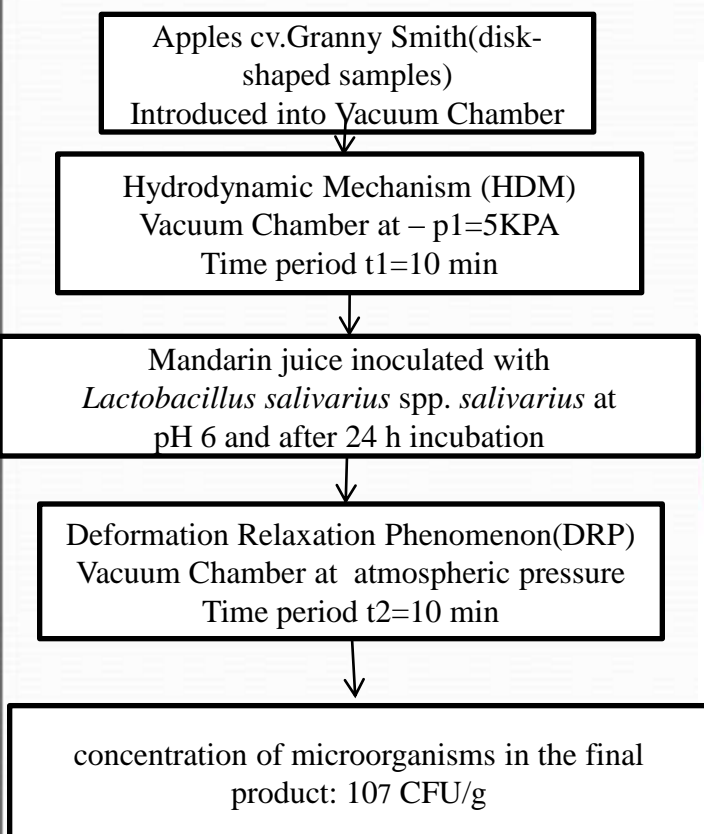


vacuum impregnation to modify health-promoting properties of apples cv. Granny Smith (disk-shaped samples)

Raw Material	Composition of Vacuum Impregnation Solutions	Process Parameters	Effect
apples cv. Granny Smith (disk-shaped samples)	mandarin juice inoculated with <i>Lactobacillus salivarius</i> spp. <i>salivarius</i> at pH 6 and after 24 h incubation	$p1$ 5 kPa $t1$ 10 min $t2$ 10 min	concentration of microorganisms in the final product: 107 CFU/g

Flow Chart



Vacuum Impregnation Setup



**DOWNLOAD
CATALOG**

Result:
Concentration of microorganisms in the final product: 107 CFU/g. Vacuum impregnated apple slices were air dried, freeze-dried and dried in a process combining air drying and radiant energy vacuum drying. Initially, the *L. rhamnosus* population in apple slices tissue after impregnation was at 109 CFU/g. The freeze-drying process was most effective in protecting bacteria in comparison to the other two drying methods, reducing the microbial population by 1.1 log. In turn, a combination of air drying and radiant energy vacuum drying resulted in a smaller reduction of the level of microorganisms during room temperature storage in enriched apple snacks. Additionally, in a study by Betoret *et al.* (2009), a combination of vacuum impregnation and drying provided a probiotic fruit product containing microorganisms at a level comparable to that in probiotic dairy products