Vacuum Impregnation to modify physico chemical properties and sensory attributes of Apples cv. (cultivar). Granny Smith

Raw Material	Composition of Vacuum Impregnation Solutions	Process Parameters	Effect
apples cv. (cultivar). Granny Smith (cylindrical samples (2 cm height and diameter))	rectified grape must (hypertonic solutions: 65°, 50° and 30° Brix) and 3% (*w*/*w*) high methoxyl pectin solutions	*p*1 5 kPa *t*1 5 min *t*2 25 min in higher solution viscosity *t*2 55 min	Improvement of mechanical and structural properties of tissue, notable reduction of freezable water which could improve fruit resistance to freezing damage

Flow Chart

apples cv. (cultivar). Granny Smith (cylindrical samples (2 cm height and diameter))

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Hydrodynamic Mechanism (HDM)
Vacuum Chamber at – 5 KPA
Time – 5 minutes

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Rectified grape must (hypertonic solutions: 65°, 50° and 30° Brix) and 3% (*w*/*w*) high methoxyl pectin solutions is pumped into vacuum Chamber

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Deformation Relaxation Phenomenon(DRP)
Vacuum Chamber at atmospheric pressure
Time – *t*2 25 min in higher solution viscosity
*t*2 55 min

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Result : Improvement of mechanical and structural properties of tissue, notable reduction of freezable water which could improve fruit resistance to freezing damage

Vacuum Impregnation Setup

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Result

Improvement of mechanical and structural properties of tissue, notable reduction of freezable water which could improve fruit resistance to freezing damage

In the case of freezing, a partial removal of water may reduce the content of frozen water and provide a more stable product as a result of an increase in glass transition temperature at maximum cryoconcentration of the liquid phase of the product

Burhani Hardware And Fittings
110 General Patters Road. Chennai -2 . www.burhanihardware.org, sales@burhanihardware.org
044-45116252 +919677296252