



Processing Oranges Procedure

Date (2022-15-19) - Processing Oranges - MG

Prior to any experiments, the fruit needs to be processed to remove any natural fruit enzymes or microorganisms present on the peels (1). This procedure also covers how to separate the various orange components prior to the enzymatic processing steps.

Materials

- Sweet oranges (Navel oranges)
- 70% ethanol
- Sterile storage containers
- Thinner coffee filter paper (Compliments Basket Coffee Filters)
- Juicer (model: Breville the Juice Fountain Cold, model BJE430SILUSC)
- Food processor (model: Hamilton Beach, model 70730C)
- Vacuum (VWR Vacuum Filtration Systems standard line; filter paper removed)
- Cheesecloth (Culinary Elements Natural Cotton Cheesecloth)

Methods

Orange Processing

1. Wash sweet oranges (Navel oranges) in running water to remove any external debris.
2. Sterilize the exterior of the fruit with 70% ethanol.
3. Peel the oranges and store peels in a container at -20°C.
 - a. To peel, run a blade from stem to opposite side, then peel off.
4. Place the peeled oranges in the fruit juicer.
 - a. Pour the juice product into a clean glass bottle
5. For pulp
 - a. Press with cheesecloth to add extra juice into the funnel
 - b. Processed a second time in the juicer.
 - c. Add juice to bottle
6. To process juice further, spin 5x in centrifuge in 50 mL Falcon tubes at the following setting
 - a. 3270g, 20min
 - b. Keep supernatant as juice, discard pellet
7. Pasteurize the pulp mixture in a water bath via the autoclave
8. Allow to cool and store in a sterile container at -20°C.

Additions:

- Cheesecloth
- Toaster oven

References

[1] Labrath YP, Gaikar VG. Solid State Fermentation of Orange Peels for Production of Cellulase, Pectinase and Recovery of Orange Oil using Aspergillus Species NCIM 1432. [Internet]. In Review; 2020 Dec [cited 2022 May 19]. Available from: <https://www.researchsquare.com/article/rs-123470/v1>