

Sureeporn Swang 2008: Study on Virgin Coconut Oil Odor Removal Processes. Master of Science (Food Science), Major Field: Food Science, Department of Food Science and Technology. Thesis Advisor: Associate Professor Sukoncheun Sringam, Ph.D. 110 pages.

Virgin coconut oil (VCO) has high economic value since it can be used as an ingredient of supplementary food products. However, some consumers do not accept natural coconut oil odor. VCO is normally produced by natural fermentation process, that has chance to have repulsive odors; putrid odor from bacteria and ketonic odor from mould contamination. The objective of this research is to remove unacceptable odors from VCO in order to remedy VCO from putrid and ketonic odors and add value to no odor VCO. Three odor removal processes were studied using putrid oil. The first, water extraction was tested at 75 85 and 95 °C for 3 4 and 5 times. The second, steam distillation was tested at 80 90 and 100 °C for 2 3 and 4 hours. And the third, nitrogen distillation was tested at 90 °C, nitrogen feed rate 0.2 0.3 and 0.4 bar for 20 30 and 40 minutes. The selection of suitable condition for each process was based on odor intensity ranking by 10 trained panelists. The suitable conditions of water extraction was 75 °C for 5 times, steam distillation was 90 °C for 3 hours and nitrogen distillation was nitrogen feed rate 0.2 bar for 20 minutes. When three odor removal processes at their suitable conditions were compared, the nitrogen distillation gave the weakest odor. Therefore, nitrogen distillation was the most suitable process for remove odor of VCO. Nitrogen distillation was then used for odor removal of control, putrid and ketonic oils. Intensity before and after odor removal of each kind of oil were compared by 30 trained panelists using comparison test. Most panelists could tell the difference. Furthermore, free fatty acid content and unsaponifiable matter of odor removed oils tended to decrease, especially in putrid oil, were decreased from 0.37 to 0.24% (as lauric acid) and 0.21 to 0.06% (by weight), respectively. The odor removal have effect on fatty acid compositions of all oils, determined by GC-MS but still within the range of Asian and Pacific Coconut Community standard. Quantification and identification of volatile compounds, it was found ketone, ester, acid, and lactone that were aroma compounds in coconut oil. The odor removal have effect on relative concentration to decrease. It can be concluded that nitrogen distillation can be used for removal of all 3 kinds of odor; natural, putrid and ketonic from VCO.

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Thesis Advisor's signature