

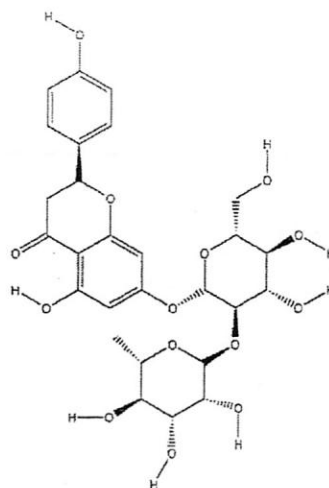
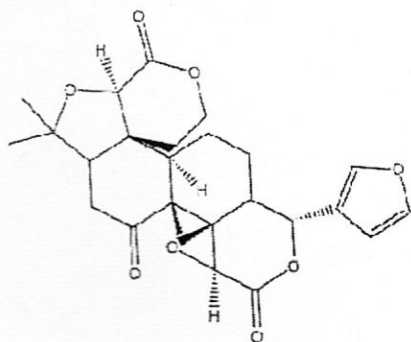
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Identification of main chemical compound responsible for the bitterness in pasteurized juice of "Bibila sweet" oranges

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Development of bitterness in citrus juices after pasteurizing treatment is a prominent industrial problem. The aim of this study is to determine the major chemical compound or compounds responsible for the bitterness in "Bibila sweet" oranges. Limonin and naringin are the two major bitter compounds in citrus juices, which belong to limonoids and flavonoids respectively. A sensory evaluation was conducted as the preliminary study and this indicated that the bitterness developed after the pasteurizing treatment. Ultra-high performance liquid chromatography (UHPLC) technique was used to determine the concentration of limonin and naringin in raw and pasteurized orange juices. The average concentration of limonin in raw juice was 0.965 ± 0.132 ppm and in pasteurized juice it was 23.26 ± 1.36 ppm. The concentration of limonin in pasteurized juice was higher than the threshold level or 6 ppm. Considering the analysis of naringin by UHPLC, the average concentration of naringin in raw juice was 137.1 ± 10.8 ppm and in pasteurized juice it was 136.6 ± 10.9 ppm. Hence the limonin is the major compound responsible for the bitterness in pasteurized juice as the concentration increased by 20 fold compared to raw juice. This reveals that "delayed bitterness" may be the main reason for the alleviation of bitterness and it accelerates with the heat treatment. Further, naringin is the minor compound as there was no significant difference in the concentration of naringin between raw juice and pasteurized juice. Naringin may not account for the bitterness even if the concentration is higher than limonin, due to the high threshold level of naringin.



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