

CHAPTER 5

CONCLUSION

The experiment was conducted to study the physical, chemical and microbiological properties of fresh orange juice cv. Sai Nam Pung and cv. Khieo Waan in Northern Thailand immediately after harvest and different storage periods and storage temperatures. Some of the parameters could be used as indicator of quality loss of the juices such as colour L*, a* and b*, total soluble solid, titratable acidity, ascorbic acid and total plate counts varied with storage time and temperature. The shelf life of orange juice both cv. Sai Nam Pung and cv. Khieo Waan had only 1 day shelf life at 30°C, 6 days at 4°C and more than 21 days at -18°C. Sai Num Pung and Khaieo Waan at -18°C still have a good quality throughout the storage time, however ascorbic acid contents were reduced.

Storage temperature was the prime limiting factor for shelf life of orange juice. However various effects of low temperatures on the keeping quality of the fresh orange juice prepared from oranges cv. Sai Num Pung and Khieo Waan can be considered to make freshly orange juice economically feasible to market. Their safety and shelf life were considered in terms of microbiological regulation and their chemical changes. The colony count limits not more than 5×10^4 cfu/ml according to the European Economic Community regulation were used as the safety criteria. These studies illustrated that the shelf life of the natural fresh orange juice stored at room temperature (30°C), 4°C and -18°C could be extended only 1, 6 and more than 21 days respectively because beyond these periods, both their total colony counts were higher than the above standard limit and their odour and chemical changes were unacceptable. The keeping qualities of both orange juice from the 2 cultivars, Sai Num Pung and Khaieo Waan gave the same results.

Effect of nisin and pH on effectiveness to extension shelf life of orange juice Sai Nam Pung and cv. Khieo Waan was studied. The values of pH were studied at 3.6, 4.2 and 4.8 and nisin concentration at 50 and 100 IU/ml compared with the control was no nisin added. All of samples were storage at 4°C during 0 to 42 days.

The results showed that combination of nisin 50 IU/ml and a reduced pH level at 3.6 gave low levels of spoilage at 4°C storage temperature. The keeping quality results were supported by parameters such as colour L*, a* and b*, total soluble solid, titratable acidity, ascorbic acid and microbiological analyses. The shelf life of orange juice both cv. Sai Nam Pung and cv. Khieo Waan that 50 IU/ml nisin and pH levels at 3.6 gave the same results. The increase in effectiveness of nisin at lower pH values could be explained by intramolecular and intermolecular reactions between nucleophilic groups and the dehydro residues (Breukink and de Kruijff, 1999; Paul Ross *et al.*, 2002).



ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่
Copyright© by Chiang Mai University
All rights reserved