

Chapter 5

Conclusion

1. The stabilization of rice bran by domestic heating could be applied to RBO extraction prior to pressing to improve oil extraction yield, quality and antioxidant properties of cold-pressed RBO. Hot air and microwave heating were the most effective methods for stabilization of rice bran with a high extraction yield, and lowering of AV, FFA and PV. Those heating methods also provided higher contents of total phenolic compounds, flavonoid and gamma oryzanol while increasing the antioxidant activities of RBO. However, we suggested that microwave heating is not economical and not suitable to be used in small and medium scales in rural areas. But hot air heating is a very efficient method for stabilization and could be applicable for small and medium scale operations in rural areas.

2. SRB is a good source of fiber, lipid, protein, vitamins mineral and phytochemicals. Compared with hexane extracted SRBO, cold-pressed SRBO contains higher mineral, vitamin and phytochemical and better chemical properties but lower in extraction yield. The cold-pressing method could be used for extraction of commercial SRBO for a small factory in the local area.

3. Stable CPRBO nanoemulsions can be formed using 3% GMS (30% CPRBO). The mean droplet diameter, lightness (L^*) and yellowness (b^*) of CPRBO emulsion tended to decrease as GMS concentration was increased. However, the increasing of the GMS concentration had no impact on antioxidant activity, gamma oryzanol and total phenolic compound content of CPRBO nanoemulsion. The storage of CPRBO nanoemulsion at room temperature for 90 days showed that lipid oxidation was gradually increased after 30 days of storage as gamma oryzanol and antioxidant activity was decreased. CPRBO nanoemulsions

were unstable at low pH, high salt concentration and high temperature. Increase of yellowness (b^*) and viscosity were found when increase of salt concentration and decreases of pH. However, the thermal processing had no influence on the yellowness and viscosity of nanoemulsion. These results have important implications for the formulation and production of CPRBO emulsion-based products using GMS as an emulsifier.