CHAPTER V

CONCLUSION AND SUGGESTION

5.1 Conclusion

Rice bran wax can be purified by fractional crystallization which is the combination of Crystaf and TREF techniques by using 500 um sand as an inert support and hexane as an eluent, the rice bran wax can be separated into 4 fractions at the temperature of 20 C, 30 C, 40 C and 50 C, respectively.

The distribution of each fractions are as follows : at 20 °C = 21.26%, at 30 °C = 27.50%, at 40 °C = 29.64%, at 50 °C = 4.35%, respectively. It can be seen that the major component is at 40 °C.

The physical properties of wax at 20 °C are as follows acid value between 23-25, saponification value between 235-252, iodine value between 52-54 and drop melting point between 68.5-71.5, at 30 °C are as follows acid value between13-14, saponification value between 160-163, iodine value between 44-45 and drop melting point between 75-77, at 40 °C are as follows acid value is 5, saponification value between 142-144, iodine value is 11 and drop melting point between 76-78, at 50 °C are as follows acid value is 11, saponification value between 129-135, iodine value between 7-8and drop melting point between 75-76.

From the FT-IR spectra, all wax fractions are shown an important bands of at 1730-1743 cm^{-1} (C=O Stretching) and 1158-1174 cm^{-1} (C-O Stretching) and it could be concluded that all rice bran wax fractions were ester wax.

The GC-MS results of all wax fractions are shown to be free fatty acid and fatty acid ester. The major components are shown only fatty acid ester. and can be concluded that wax fraction at 40 °C is more purify than the others.

According from purity, acid value, saponification value, iodine value and drop melting point FT-IR and GC-MS spectra, the wax fraction at 40 °C has the physical properties and specification same as the commercial refined rice bran wax s used in cosmetics and medicine industries.

5.2 Suggestions

1. In the combination of TREF and Crystaf techniques, the mixture of solvent system and eleuting gradient system should be used to get the better results.

2. The size and surface area of an inert support should be varied to get the better conditions to purify waxes as well as polymers.

3. The cost of this technique should be improved to the competitive level of commercial available techniques.