CONCLUSION
5.0 CONCLUSION

The objectives set for this study were to develop analytical methodology for quantitation of oryzanol, concentration of oryzanol to get maximum yield, to identify suitable blends for refined oil preparation having good stability and nutritional value as well as to study therapeutic behaviour of refined ricebran oils in comparison to other edible oils. The above objectives set for this study have been fully accomplished. The following conclusions are drawn from the interpretation of the results obtained during the above research study:

5.1 STANDARDISATION OF ANALYTICAL TECHNIQUE FOR IDENTIFICATION AND QUANTITATION OF ORYZANOL IN RICEBRAN OIL

The identification and quantitation was done by reverse phase HPLC using RP 18 Lichrosorb column. The gradient system was found to be more suitable having acetonitrile, methanol, methylene chloride in the ratio of 45:45:5 as solvent A and 5% water as solvent B. The flow rate was 1 ml/min, column oven temperature at 40°C and wavelength 315 nm. The results were comparable with those obtained by UV spectroscopic method.

5.2 ISOLATION OF ORYZANOL FROM CRUDE RICEBRAN OIL

Isolation of oryzanol from crude ricebran oil was carried out in four steps viz. chromatography, rechromatography, purification and crystallisation. 18% pure oryzanol was obtained by column chromatography which could further be enriched to 26% by rechromatography. This 26% oryzanol concentrate was purified by dissolving it in hexane followed by filtration, resulting in 83% oryzanol. This crude...
oryzanol was crystallised using methanol and acetone in the ratio of 2:1 yielding white crystals of oryzanol having 98% purity.

5.3 QUANTITATION OF TOCOPHEROLS IN RICEBRAN OIL SAMPLES
Tocopherols were analysed by HPLC method and it was observed that oils contained significant quantity of \( \alpha \)-tocopherol and \( \gamma \)-tocopherol. These tocopherols imparted oxidative stability to the oil as well as nutritional value.

5.4 BLENDING OF RICEBRAN OIL (RBO) WITH GROUNDNUT OIL (GNO) AND SAFFLOWER OIL (SAF):

The frying studies were done with RBO, GNO, and SAF alone besides using blends of their in different proportions.

(i) RBO was found to be comparable to GNO from stability point of view in frying characteristics, however it was more stable than SAF. Further, since it contains micronutrients such as vitamin E and oryzanol it is nutritionally better than GNO.

(ii) Blends of RBO and GNO were found to be quite stable. However blending of RBO with GNO will provide additional input to the latter.

(iii) It was observed that the stability of SAF improved on blending with RBO and was found to be comparable with the blends of RBO and GNO. Amongst the various blends of RBO and SAF, a blend having RBO and SAF in the ratio of 80:20 was found to be most stable in frying characteristics.
5.5 HYPOLIPIDEMIC EFFECT OF RICEBRAN OIL IN COMPARISON WITH OTHER EDIBLE OILS:

(i) It was found that RBO lowers the exogenous as well as endogenous cholesterol to the maximum level followed by SAF, SUN, SOYA and GNO.

(ii) The fatty acid profiles of GNO and RBO were similar still the hypolipidemic effect of RBO was better than GNO, indicating that unsaponifiable matter present in RBO is responsible for supplementing the cholesterol lowering effect to PUFA.

(iii) A blend of RBO and SAF in the ratio of 70:30 was found to give best cholesterol lowering effects in clinical trials on albino rats indicating that high level of PUFA in SAF and micronutrients in the unsaponifiable fraction of RBO gave synergistic effect in cholesterol lowering property.