CHAPTER 7

SUMMARY, CONCLUSION AND SCOPE OF FUTURE WORK

7.1 SUMMARY AND CONCLUSION

The present work is carried out to find out the quality parameters of blended oils. In the deep fat fried products by taking into consideration the factors like temperature and acceptability studies etc. The oils selected for this present study are Sunflower oil (SF), Soybean oil (SB), Rice bran oil (RB) and the selected blends are SF+SB, SB+RB, SF+RB, to observe their effect on acceptability in the selected product “snacks”. The product acceptability is observed. The acceptability studies of the product fried in selected oils and oil blends and the variations in snacks has been conducted.

The proportions selected for the blended oils are 50:50 percent because of their higher acceptability. This was because of the toxics present in the some oils like ground nut oil and Soybean oil etc.

From the results, it can be concluded that the snacks fried in Soybean oil gained maximum acceptability of oil in almost all the variations. Acceptability scores attained “maximum” by the product fried in the Soybean medium as well as prepared with other variations. But other oils did not reach the score equivalent to Soybean blended oil. The “excellent” scores are attained to product fried in Soybean and Soybean + Rice bran oils blend. Among the high linoleic acid oils, Soybean oil is considered best and among the blends, Soybean oil is found to give beneficial results next to olive oil with minimum increases in the peroxide values free fatty acid, iodine and saponification values. It is statically proved that the effect of type of the oil with appearance and color of the product is significantly high at five percent level.

Sunflower oil is of light amber in color when it is crude on refining the color changes from dark yellow to pale yellow. Rice bran oil changes to dark yellow to yellow in color and it is extracted from the brown rice or rice bran. Palm oil is red in color or orange red in color when it is crude because of the carotenoids present in it. When it is refined it changes golden yellow in color. Soybean oil is dark brown color when it is refined it is changed to clear light yellow in color. The spread ability test is carried out using line spread chart. Spreadability of individual oil Sunflower oil is very high (14cm),
rice bran oil is (10 cm), Soybean oil (9 cm) and Olive oil (8cm) has very low spread ability. The values of the oils are Soybean oil (0.6mg), Sunflower oil (0.4mg) and rice bran oil (0.5 mg). The peroxide values for Sunflower oil is high (0.3 meq) and next to the Soybean oil is (0.24 meq), and rice bran oil contain same amounts (0.20meq) of peroxide value. Iodine number for palm oil contains high amount (0.9 mg) of iodine number and next to Soybean oil (0.7mg) and rice bran oil (0.6 mg). Maximum of saponification number is observed in soy bean oil (0.7 mg) followed by Sunflower oil, rice bran oil (0.14 mg, 0.16 mg) respectively. Smoking point for different individual oils records different ranges of temperature. The smoking point for rice bran oil and Sunflower oils are very high i.e., 185 and 180°C respectively. The temperature for palm oil is 135°C very low. Temperature of Soybean oil is 150°C.

Among all the individual oils the product prepared with palm oil and rice bran oil takes more time to prepare product Snacks is 48 and 43 seconds respectively. Soybean oil takes a moderate temperature of 40 seconds to deep fry the snacks. Sunflower oil takes a lowest temperature of about 30 sec to cook the snacks among all the individual oils.

Sensory evaluation assesses the acceptability of the selected individual oils. For sensory evaluation Snacks was prepared with different individual oils. In sensory evaluation the quality parameters of appearance, color, texture and taste was recorded. All the oils show slight variance (6.3%, 6.25%, 6.46%) between the products prepared with different oils. the product prepared with the Sunflower oil show less variance i.e., 5.45% only. All the oils show similar variance (5.46, 5.30, 5.25%) between the products prepared with different oils. the product prepared with the Groundnut oil show less variance. The product prepared with Soybean oil showed a significant variance in flavor i.e., 6.73%. The product prepared with rice bran oil shows a different range of acceptability because of the flavor i.e 6.92% range respectively. Sunflower oil products gave a medium range of flavor 6.85%.The product prepared with Olive oil shows a great variance in flavor i.e., 5.73%. Palm oil and Groundnut oil products gave a medium range of flavor 5.92 and 5.85.

Variations of different proportions like 50:50, 60:70, 70:30, and 80:20 was blended to check the suitability to fry the products and after trails it was found that 50:50
proportion is a standard proportion chose and is at acceptable level with regard to constituents and Viscosity. Among these the proportion of 50:50 is more advisable for blending oil because some of the oils contain toxic substances like trypsin inhibitor in Soybean oil and Groundnut oil. These are highly toxic when consumed in higher proportions.

Using the selected blended oil combination Soybean: Rice bran oil we have developed Chekodi, Potato chips and Bhoondi. These products were further studied for their shelf life studies.

Overall acceptability shows which combination of oil is acceptable for consumption. Among all the blended oils that are available Soybean oil when mixed with Rice bran oil (6.25 ranges). Soybean oil with Sunflower oil, Sunflower oil with rice bran oil shows first level (5.95; 6.13) of acceptability. When compared with all the combinations of oils only the palm oil combined with Soybean and rice bran oils gives within consumer acceptable range of the blended oil product. Among all the blended oils that are available Olive oil when mixed with Groundnut oil (5.74 ranges), palm oil with Groundnut oil (5.55 ranges) give higher percentages of acceptability. Olive oil with rice bran oil, Groundnut oil with Palm oil and palm oil with Olive oil, palm oil with Palm oil shows second level (5.68) of acceptability. When compared with all the combinations of oils only the palm oil combined with Soybean and rice bran oils gives within consumer acceptable range of the blended oil product.

Oleic acid was the most widely recognized FA found in all oils. Rice bran oil have 61.9% oleic acid (18:1). Eicosenic acid, Docosanoic acid and Tetracosanoic acid were missing and exhibit in Groundnut oil. Soybean oil was found to contain 49.4% oleic acid (18:1), 19.0% linoleic acid (18:2), 10.6% palmitic acid (16:0) and 6.8% stearic acid (18:0). It contains around 70% unsaturated fats. Olive oil was discovered contain 61.9% oleic acid (18:1), 7.5% linoleic acid (18:2), 14.9% palmitic acid (16:0) and 14.4% stearic acid (18:0). Oleic acid is the major unsaturated fats found in Palm oil. It contains roughly 69% unsaturated fats.

Oleic acid was the most common FA found in all oils. Rice bran oil have 61.9% oleic acid (18:1). Eicosenic acid, Docosanoic acid and Tetracosanoic acid were absent
and present in Groundnut oil. Soybean oil was found to contain 49.4% oleic acid (18:1), 19.0% linoleic acid (18:2), 10.6% palmitic acid (16:0) and 6.8% stearic acid (18:0). It contains approximately 70% unsaturated fatty acids. Olive oil was found contain 61.9 % oleic acid (18:1), 7.5% linoleic acid (18:2), 14.9% palmitic acid (16:0) and 14.4 % stearic acid (18:0). Oleic acid is the major Unsaturated fatty acids found in Palm oil. It contains approximately 69% unsaturated fatty acids.

7.2 SCOPE OF FUTURE WORK

Data collected that on the whole among blends Soybean is found to exhibit positive results. Thus it can be suggested that Soybean oil should be used as a good frying media oil by the products and blending should be done attain better results as revealed from this study. These practices can be applied in the households levels easily but commercially also, it should be checked that such practices are followed well by fast food outlets, hotels, industries etc. for better and beneficial results. Thus products as such prepared attain good flavor, aroma and crisp appearance which will have immense popularity among all classes of people.