Chapter 6

6.1 RECOMMENDATIONS:

1. Proper washing of plant material, segregation of aerial part, neatly drying, powdered and storage is necessary.
2. For experimental work proper conditions shall be maintain.
3. By selecting proper method of extraction may improve yield of alkaloids.
4. Separation of aqueous, organic and liphophilic layer reflects on percentage yield of alkaloids.
5. During polymorphic study keen observations along with optimum condition are required.
6. After purification, different alkaloids crystals were obtained.
7. As there was very low yield of alkaloids, So need to ensure in different combination of solvent system.
8. Extraction of alkaloids by using SDS was very tedious and with EDTA was very effective.
9. The alkaloids extraction determination from fruit of solanum xanthocarpum can be done by using same method which will be beneficial.
10. Yield of product can be increased by changing the experimental conditions.
11. Crystals obtained from purified fractions by column chromatography can be used for IR, UV, NMR and XRD analysis. This data will give more information about structure determination.
12. Structure determination will be possible after puricarion of obtained crude dye solanum xanthocarpum fruits and leaves.
13. Same method can be applicable for other plants for extraction of alkaloids.
14. Azo dye in different solution get oxidized and changes colours.
15. Natural dye and Azo dye preparation can be used for other plants.
6.2 SCOPE FOR FURTHER WORK:

Alkaloids and colourants extracted from *Solanum xanthocarpum* plant has wide scope for further work.

1. *Solanum xanthocarpum* is a fast growing weedland plant consisting of various alkaloids in root, fruits, flower and leaves which predominantly inhibits the growth of nutritive plant. Due to it deteriorations of soil may be examined with the help of advanced tools.

2. To study the safety profile of *Solanum xanthocarpum* extract. The advanced and modern techniques will be useful for the identification as well as for the separation of *Solanum xanthocarpum* alkaloids.

3. The extracted alkaloids can be used to increase the production value and importance of the plant.

4. These plants may be grown in farms and gardens through the genetic engineering.

5. Mixed organic solvents with good alkaloids and colourants extracting capacity should be studied.

6. Molecular recognition of colourants can be studied depthly and various fields.

7. Determination of structures of dyes or colourants will be possible in the purification of colourants.

8. In purification of crude colourants some new methods will be applicable.

9. Obtained dyes or colourants from *Solanum xanthocarpum* leaves and fruits will be applicable in various fields.

10. In textile and paper industries the natural dyes will be applicable.
11. Due to the safe and eco-friendly nature of dyes obtained from Solanum xanthocarpum, will be applicable for various dyeing purpose.

6.3 LIMITATIONS:
1. Extraction of alkaloids with SDS was very tedious work because of froth formation.
2. Extraction of alkaloids with solvent method form very sticky alkaloids that was very difficult for separation.
3. Formulation of alkaloids should be proper before the application in use.
4. Dyes extracted from leaves and fruits of Solanum xanthocarpum were difficult to use in water.
5. In extraction process different solvents on alkaloids formation behave different.
6. Different extraction methods errors may vary results. Solvent available which can able to extract alkaloids completely from the solution. Therefore selection of solvent will be crucial.
7. Extraction of dyes using different methods may or may not shows different shades of colours.
8. Colour appearance was varies with or without mordants on paper, cotton and wool.
9. Structure determination of colourants or dyes is very difficult from the crude dyes.
10. It required more purification for getting proper structural data of the dyes and pigments.
11. Some more work should be beneficial for getting proper structure of colourants. It will give scope to the researcher in the field of dyes and alkaloids.