

THE CHARACTERISTIC STUDY OF HERBAL INDICATOR IN THE TITREMETRIC ANALYSIS OBTAINED BY HYDRO-ALCOHOLIC EXTRACTION- *Jasminum sambac* & *Lilium candidum* FLOWERS.

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ABSTRACT

Indicators are very essential chemicals, they will change colour of the medium as change the pH of that medium. Now a day's synthetic indicators are used to show sharp colour change at intervals of pH in all types of titrations, but they have certain disadvantages like their expenses, long process & complex synthesis, hazardous waste products, availability problems and environmental issues. By considering all these factors, the attempt has been made to establish the green indicator obtained from herbal source i.e. plant's pigments to replace synthetic indicators. The present work highlights the use of the hydro alcoholic extract of few common flowers as an indicator in acid-base titrations. Because herbal indicator is easily available as well as easy to extract from their source and gives sharp intense colour change at the equivalence point as phenolphthalein and methyl orange indicator gives. As these flower extracts have simple, cost-effective, environment friendly extraction procedure and excellent performance. it would be possible to replace the synthetic indicators being used in conventional laboratories with herbal flower indicators.

KEY WORDS: pH indicators, flower pigments, End point, neutralization indicators, hydro alcoholic extract, titrations.

INTRODUCTION

Acid-base indicators are commonly used to mark the equivalence point of an acid-base titration or to measure the existing pH of a medium. The hydro alcoholic extract of flower of plant *Jasminum sambac* & *Lilium candidum* shows remarkable change in colour with the change in ph. Having this property, gives an opportunity to use it as green indicator rather than using the conventional synthetic indicators like Phenolphthalein which are chemical based and may cause health hazards. Some scientist has successfully tried to invent the herbal indicator such as methanolic extract of the flowers of

Targets erecta, Dianthus plumarius and Antirrhinum majus, Morus alba, Rosa indica, Methanolic fruit extract of Punica granatum, Hibiscus rosa sinensis etc. In present study, we used *Jasminum sambac* & *Lilium candidum* flower's hydro alcoholic extract as natural and effective indicator for acid-base titration.

Jasminum sambac is a scrambling small shrub, which can grow up to 3 meters (1.6 to 9.8 ft) of height. *Jasminum sambac* has been commonly cultivated throughout the world for its attractive and sweetly fragrant flower. [11] The stems of this shrubby plant, evergreen, twining vine are clad in glossy appearance, dark green in colour,

pointed shape, oval leaves which are grouped in opposite pairs of three. Leaves are shiny and dark green in colour. The intensely fragrant, white, waxy flowers resemble miniature gardenias and appear in clusters, although each flower is only about 1 cm in size. Jasmine blooms throughout the summer season – and almost continuously in warm climates. The fruits are small black berries but are seldom formed in cultivation. *Jasminum sambac* generally cultivated and reproduced by solely by cuttings, layering, marcotting, and other methods of asexual propagation. ^[12] ^[13] *Jasminum sambac* is native to southern Asia, India, Bangladesh, Pakistan, Bhutan, Myanmar and Sri Lanka and many other countries. Jasmine plant is found in almost all the parts of India. ^[9] ^[10]

Lilium candidum, also called as Madonna lily, is a plant of the lily family. It forms bulbs at the ground level, and, unlike other lilies, grows a basal rosette of leaves during winter session, which die the following in summer. A leafy floral stem, which generally grows up to height of 1.2 metres (3 ft 11 in) tall, but exceptionally 2 metres (6 ft 7 in) long, emerges in late spring and bears several sweetly and very fragrant flowers in summer. The flowers are pure white in colour and tinted yellow in their parts of throats. ^[14] ^[15] It is cultivated in the Balkans, Middle East, of Europe, including France, Italy, and Ukraine, and in North Africa, the Canary Islands, Mexico. It has great symbolic value since then for many cultures. It is susceptible to virus diseases of lilies and some fungus like Botrytis fungus. One technique to avoid problems with virus's diseases is to grow plants from seed instead of bulblets method.



***Jasminum sambac* FLOWERS**



***Lilium candidum* FLOWERS**

MATERIALS AND METHODS:

Plant materials

Fresh flowers of *Jasminum sambac* (sample- A), *Lilium candidum* (sample- B) was collected from campus of Ideal College of pharmacy & research, India in the month of March.

Reagents and glassware's

The study was well performed by using Analytical grade reagents as per standard were made available from ideal college of pharmacy and the whole experimental work was performed by using the clean and same set of glassware's. The reagents and volumetric solutions were prepared as per Indian pharmacopeia.

Preparation of flower extract

Cleaned fresh flower petals of each plant, first crushed in mortar then transferred into conical flask and added enough 90% ethanol to produce 50% concentration of extract, followed by maceration

method of extraction for 48 hrs. Each extract was then preserved in well closed container and stored away from direct sun light.



Methods

The experiment was performed by using the same set of glass wares for titration of each flower extract. Titrant of 10 ml with 2 to 3 drops of standard indicator (Phenolphthalein) was titrated against 1 molar acid–base. The results were depicted in the experiment was carried by using the same set of glass wares for titrations of each flower extracts.

The equimolar (1 M) titrations were performed using 10 ml of titrant with 2 ml of indicator (aqueous). All the parameters for each experiment are given in table format. A set of three experiments, each for acid base titrations were carried out. The mean calculations for each titration were calculated from results obtained.



Sample no.	Color of flower	Color of ethanolic extract of flower	Color in acidic medium	Color during neutralization
A	Off white	Wine red color	Turbid white	Yellow
B	White	Pale yellow	Turbid light green	Clear light green

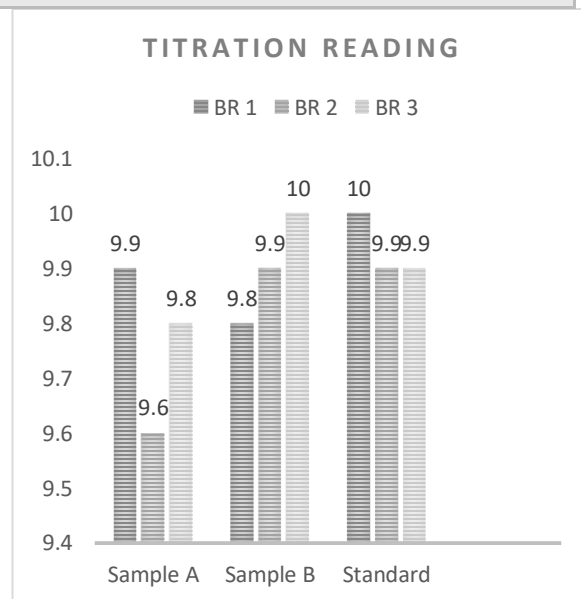
Sample- A			
Color change: - turbid white to yellow color			
Sr. no.	Initial volume(ml)	Final volume(ml)	Mean(ml)
1	0	9.9	9.83
2	0	9.6	
3	0	9.8	

Sample- B			
Color change: - turbid light green to clear light green color			
Sr. no.	Initial volume(ml)	Final volume(ml)	Mean(ml)
1	0	9.8	9.90
2	0	9.9	
3	0	10	

Standard- phenolphthalein indicator			
Color change: - colorless to light pink color			
Sr. no.	Initial volume(ml)	Final volume(ml)	Mean(ml)
1	0	10	9.93
2	0	9.9	
3	0	9.9	

RESULTS & DISCUSSION

The study proved that the equivalence point of acid-base titrations using the all different flower extract either coincided or almost closer to that of using standard phenolphthalein indicator. The each of flower extract indicator gave sharp color change at the equivalence point during titration. It was also observed that the all extract acted reversibly and gave sharp color change in both directions.



CONCLUSION

The study revealed that the hydro alcoholic extract of each flowers of *Jasminum sambac* and *Lilium candidum*, can be used as a substitute to the synthetic indicators due to its advantages like easy preparation, effective performance and ability to produce accuracy and precision in results as per followed by green chemistry.

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