STUDY AND SYNTHESIS OF *JASMINUMOFFICINALE* LEAVESAS HERBAL, ECONOMICAL AND EFFECTIVE ALTERNATIVE FOR SYNTHETIC INDICATOR

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Abstract :

Now a days pollution is perilous issue due to which in every field there is scope of development of natural alternative. In present work we report preparation of herbal indicator from *Jasminum officinale* leaves. Determination of indicator was confirmed by U.V. visible absorption technique. At λmax 450nm and 500nm values are observed in acidic and basic medium respectively. Applicability tested with reals milk and lime juice samples which showed distinct colour change. We have prepared litmus paper for acid and base test for the liquid solutions with same extract and we found impressive results with pink and green colour change. The present green indicator is an alternative to the synthetic indicator and litmus paper.

Keywords: Herbal indicator, jasminum officinale leaves, litmus paper, neutralization titration

INTRODUCTION :

Titrations are the basic chemistry laboratory technique for the quantitative analysis of substances with unknown concentrations using standard solutions of known concentration. The substance with unknown concentration and the standard solution are termed analyte and titrant respectively (Dave K., 2013). In titrimetry, the equivalence point is usually determined by the end point in the titration with a substance called indicator. It is pigments or dyes that can be isolated from a variety of sources, including plants, fungi, and algae. Virtually any flower that is red, blue, or purple in colour contains a class of organic pigments known as anthocyanin that can change colour with pH (Matthew E., 2015). Commercial indicators are expensive and some of them have toxic

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effects on users and can also cause environmental pollution. For these reasons there has been an increasing interest in searching for alternative sources of indicators from natural origins. These alternatives would be cheaper, more available, simple to extract, less toxic to users and environmentally friendly. Volumetric analysis is one of the key quantitative techniques used to analytically determine both inorganic and organic acid interaction with strong or weak acids and bases in raw materials, intermediates and finished products for quality assurance purposes (Apea O. B., 2012).

There are some reports in which researcher have been introduced some natural indicators successfully like parsley, coriander, borage, allium ampeloprasum, red cabbage, tulip petals, rose petals, rosa damascene, red onion skin, curcuma, cinnamon, ginger, saffron, black pepper, red pepper, yellow pepper, coffee, quince leaf, strawberry, sour berry, cornelian cherry, carrot, green walnut (Maroufi N. G., 2016), narium etc.(Sartape A. S., 2014). The pulps of the fruit are pH sensitive and give different colors in acidic condition (pink) and basic condition (greenish yellow). The present work highlights the use of Eugenia jambolana fruit extract as an acid base indicator in different types of acid base titrations (Magdum S. A., 2008).*Jacaranda Acutifolia*is a species of the genus Jacaranda, belonging to the family Bignoniaceae. The present study reported the use of *Jacaranda Acutifolia* flower extract as an acid base indicator in different types of acid base titrations (Jedge D., 2010).The indicator activity of *Thunbergiaerecta* L. flowers extract as natural indicators had been conducted. Flower pigment of the plant was extracted by maceration using ethanol and 1% HCl. The flower extract showed visible color change at pH from 1 to 14 and its absorbance was measured using a UV-Vis spectrophotometer. The indicator activities of flower extract had been applied in titration using a strong acid-strong base with given concentration. The extract showed an absorption band at 315 and 269 nm (Wardana A. P., 2018).

In present study we have developed natural indicator with *Jasminum officinale* leaves extract. This indicator was used to titrate acid base and very distinct color. Jasmine flowers are having worldwide acceptance for its beauty and other uses. Aroma therapy is well-known with their medicinal uses but the leaves are unemployed so we have engaged application. This application is employed whenever the leaves are dried.

EXPERIMENTAL:

Preparation of Indicator

The petals Jasminum officinale leaves were collected and air dried. Then these petals were crushed and grinded powder was dissolve in ethanol. The extract was stirred for few minutes and filtered with whatman filter paper No.1 the extract was diluted with ethanol and the indicator is ready to use.

Preparation of pH paper indicator:

The extract was not only developed and used as indicator but also generated pH indicator strip. Whatmann filter paper No 1. And 41 were soaked in concentrated extract in ethanol for 24hr. and tested for the developing the strip as pH indicator alternative to litmus paper. We got the better result it was better exercised for various applications. In acidic medium it showed light orange color while in basic medium it showed blue color to strip.

RESULT DISSUASION

Color change at various PH: The color change has invented for pH range from 1 to 12 [Fig. 1]. The color change has different wavelength values mainly acidic range it showed λmax 450 ±5nm while basic pH range showed λmax values 500 ±5nm. In spectrum has been taken with UV – VIS spectrophotometer [Fig. 2]. The spectrum of acidic and basic pH solution is the color change can observed with naked eye only, which may reveals indicator sensitivity towards pH.

Titration: The developed indicator tested for all three types of acid base titration viz. strong acid vs strong base (HCl vs NaOH), weak acid vs strong base (CH_3COOH vs NaOH), And strong acid vs weak base (HCl vs NH_4OH). The sharp end point was observed for all types.

Application of pH paper: The application for titration was used in regular manner in laboratory along, with this our developed the pH paper strip [Fig. 3] was used for various application and confirmed with milk and lime juice [Fig. 4].

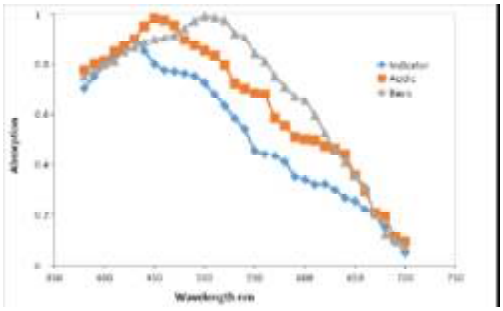

Fig. 1 Absorbance of indicator at various wavelength

Fig. 2 Indicator colour change in HCl and NaOH

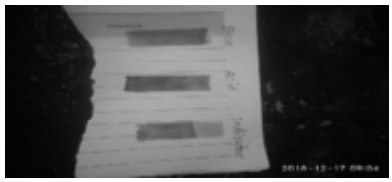

Fig. 3.Litmus paper in acid and base media

Fig. 4 Real samples like milk, lime juice by addition of indicator

CONCLUSION:

In the present study *Jasminum officinale* leaves extract was used as natural indicator for acid base titration and pH indicator strip as best alternative for litmus paper. We found results mostly correlates to synthetic indicator and developed litmus paper also tested for some real samples which were found pink and blue. So it may concludes that the *jasminum officinale* leaves extract indicator is good for lab work which reduces pollution and green, economic indicator.

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