CASHMERE BOUQUET LEAVES A SIMPLE AND AFFORDABLE SOURCE AS A NATURAL INDICATOR FOR ACID-BASE TITRATION.

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Abstract : The Indictor is an essential part in laboratory procedures. The acid base indicators so far used in schools and colleges are Phenolphthalein, Methyl red and Methyl orange. The present work represents the non conventional plant materials to be used as acid base indicator. The aqueous extract of *Cashmere Bouquet* leaves were tested for pH and used as indicator for Strong acid-Strong base, Strong acid -Weak base and Weak acid- Strong base titrations. The performance was found comparable to that of conventional acid base indicators. The accuracy of end points was tested using volumetric methods. It was found very useful, economical, simple and accurate indicator for said titrations.

***IndexTerms* - *Cashmere Bouquet*, Acid base titrations, indicators.**

I. INTRODUCTION

The Nature shows its Creativity on this planet in various life forms. Each creation is unique and distinguished from the other. The design of leaves amazing color combinations shapes and sizes leave us in wonder. It Provide calmness to the eyes and their sweet fragrance spread positivity in the air. They contribute in making food items, scents and even medicines. Leaves also attract the insects for pollination. Thus leaves are miracle of the nature, for the world. *Cashmere Bouquet* is a species of flowering plant in the family Verbenaceae[1]. *Cashmere Bouquet* is a beautiful perennial shrub its origin is china, Japan. It grows to heights of 5' to 8', has large downy mid-to-dark green leaves, and leaves in tight clusters that are very fragrant in the evening, Leaves season is spring through summer zones 9b to 11. This plant does not need a lot of fertilizer in fact over-feeding will cause it to grow excessively leafy at the expense of blooms. The plant has neither thorns nor tendrils the best time for pruning is November[2]. In present study, we used *Cashmere Bouquet* leaves extract as natural and effective indicator for acid-base titration[3-5].

MATERIAL AND METHODS

Fresh leaves of *Cashmere Bouquet* were collected from the local gardens of Kolhapur regions, Maharashtra, and they were authenticated from R. C. Shahu college botany department, Kolhapur. All other ingredients were of analytical grade and purchased from Loba Chemie Pvt Ltd, Mumbai. Reagents and volumetric solutions were prepared as per standard books [6,7]. The leaves were cleaned by distilled water and cut into small pieces and macerated for 20 min. in 25ml of 90% ethanol. The extract was preserved in tight closed container and stored away from direct sun light.[7] The experiment was carried by using the same set of glassware's for all types of titrations. As the same aliquots were used for both titrations i.e. titrations by using standard indicators and leaves extract, the reagents were not calibrated. The equimolar titrations were performed using 25 ml of Titrand with three drops of indicator. All the parameters used for Analysis and the Comparison of Color Change are given in **Table 1**. A set of three experiments each for all the types of acid base titrations were carried out. The mean and standard deviation for each type of acid base titrations were calculated from results obtained.

TITRATIONS

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.

RESULT AND DISCUSSION

The leaves extract was screened for its use as an acid base indicator in various acid base titrations, and the results of this screening were compared with the results obtained by standard indicators methyl red and phenolphthalein. The results of these titrations are given in **Table 2**.

The leaves extract of *Cashmere Bouquet* was found to have Anthocyanin and is pH sensitive. The results of pH changes in various acid base titrations of this leaves indicator are shown in **Table 1.** The pH value checked for the leaves extract of *Cashmere Bouquet* and it was found as pH 7.25 Also the color and pH change observed during acid base titrations is more significant over standard indicator as it gives a sharp color change at equivalence point thus the result obtained showed that the routinely used indicators could be replaced successfully by leaves extract as they are simple, accurate, economical and precise.