Chemistry Project Report 2017-18 Sem 2

Title of project:
"Research On Flower Petals"

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Aim: To extract components from flower petals and carrying out various tests.

Theory:

A water bath is instrument containing heated water at specific constant temperature set by user and over or sample of solution are kept for hearing through water vapours.
UV-spectrophotometer is an instrument used to plot a wavelength graph for a specific sample.
Colorimeter is an device is to measure absorbance and transmittance of specific sample at set wavelength.
Beer's law states that the absorbance of a solution is directly proportional to its concentration.
pH meter is an device used to measure pH of a given sample.
Chromatography is a technique used to separate rooms from a given solution. There are different types of chromatography like Paper, Gas, TLC and Thin layer.
Paper Chromatography is a type of chromatography used to separate chemicals from a solution according to their polarity.
Scientific Names of Flower petals used:
Rose -> Rosa
Gulmohar -> Delonix *Regia*
Madar -> Calotropis Procera

Apparatus: Water Bath instrument, Colorimeter, UV-Spectrophotometer, pH meter, Beakers(100mL), Stirrer, Watch Glass,Whatman filter paper, Capillary, Flower petals (Rose, Gulmohar, Madar), Mortar, Funnel, Pencil , Scale, Quartz, Filter paper, Tissue paper.

Chemicals: Ethanol, Distilled Water, Acetone, HCl, Iodine solution, DMG, Ferric Nitrate, Copper Sulphate.

Procedure:

EXTRACTION:
1. Wash the petals and apparatus properly with distilled water.
2. Crush petals with the help of mortar and place them in respective 3 breakers.
3. Pour your 25mL distilled water in it and cover them with watch glass.
4. Place the breakers on the water bath instrument and set the temperature to 105°C.
5. Wait for an hour and leave the breakers untouched for a day so that the components properly gets mixed in the distilled water.
6. Now with the help of filter paper, filter the extracts in another 3 corresponding breakers.

WAVELENGTH:
1. Wash the quartz with distilled water and clean it with the help of tissue paper.
2. Pour distilled water in the quartz and place it in the cell 1 of UV-spectrophotometer.
3. Run a fast scan on the reference sample from range 200-800 nm.
4. Now empty the quarters and wash and clean it similarly as above and pour Rose extract in it and run a fast scan.
5. Note does the wavelength of highest peak and do the same for Gulmohar and Madar.

ABSORBANCE:
1.Clean the quartz properly with distilled water and tissue paper.
2. Pour distilled water in the quartz of colorimeter for reference and adjust the knob to zero and select proper range.
3. Pour one of the extract in the quartz and place it in the colorimeter.
4. Adjust the reading to proper wavelength as found from the UV-spectrophotometer.
5. Now down the reading of absorbance and do the same for other two.

pH:
1. Clean the pH meter properly with distilled water and tissue paper.
2. Place the pH meter in the extract of one of the extract.
3. Now down the reading and do the same for other two.

METAL IONS:
1. Take a big jar for carrying out paper chromatography and clean it.
2. Mix Ethanol with each extract as stationary phase.
3. Take 9mL Acetone and 1mL HCl as mobile phase in the jar.
4. Take Whatman filter paper and Mark a base line 1 cm from below and added 10 cm mark front line with pencil and scale.
5. Tie the paper with thread and with the help of capillary concentrate the extract mixture on the base line.
6. Place there paper in there jar and close it with watch glass.
7. Wait for the solvent to reach the front line and after our reaches front line take our the paper.
8. Apply dmg, Ferric Nitrate and Copper Sulphate to the paper and then float the paper over Iodine solution.
9. Colour observed:
Red. -> Nickel ion
Green. -> Copper ion
Blue. -> Ferric ion
10. Now down the results and do the same for other two.

Observation:

Properties/Flowers	**ROSE**	**GULMOHAR**	**MADAR**
Wavelength (nm)	700	635	320
Absorbance	0.28	0.42	0.14
pH	7.8	8.1	6.4
Ferric ion	-ve	-ve	+ve
Copper ion	+ve	+ve	+ve
Nickel ion	-ve	+ve	-ve

Conclusion:

Flowers are available in variety of coloured compounds. The thing that gives them colour is the pigments present in them or the pH and Metal ions in them. Not only these things govern the colour of flower petal but the percent of absorbance and the wavelength of light it transmits make a measurable change in it. When we talk about extraction of compounds from flower petals there are number of things that can gone through or researched but some ions like copper are common metal ions that are maybe in decimals but are present in the petals. Absorbance plays a vital role when we talk about how dark or dense a flower can be. More the absorbance, denser it will be as in the case of Gulmohar. Many flowers are used widely in medical sector which makes their pH differ as in Madar. Overall various factors conclude numerous things and help in the use of these flowers in vast ways:

1) Madar is poisonous in nature as the Ferric ion is available in it and hence it is toxic in nature. Its lower pH denotes its toxicity.
2) Since Ferric is absent in Gulmohar but Nickle is present which points towards non-toxic nature as revealed by various researches.
3) Basic nature of Rose makes its colour pink and pH 7.
4) Copper is present in mostly all extracts.

References:

1. Indian Journal of Science and Tech (Evaluation of Flower Petal Colour)
2. www.ilcpa.pl (Vishwanath Sharma study on Calotropis)
3. Journal of Chem and Pharmaceutical Research (www.jocpr.com)
4. Unit 4 & 5 Notes