


CHEMISTRY STUDY MATERIALS FOR CLASS 12
(Investigatory Project)-2ND PART
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PURPOSE



In recent days, soft drink brands were put into various questions regarding their purity. News flashed that they contain harmful pesticide, which arouse many interest in knowing its contents because I have been drinking them for years. I wanted to confirm that whether the charge imposed on these brands are true or not. Another fact which inspired me to do this project is that I am in touch with qualitative analysis whose knowledge with other factors helped me to do so.

THEORY

Cold drinks of different brands are composed of Alcohol, Carbohydrates, Carbon dioxide, Phosphate ions etc. These soft drinks give feeling of warmth, lightness and have a tangy taste which is liked by everyone. Carbon dioxide is responsible for the formation of froth on shaking the bottle. The Carbon dioxide is dissolved in water to form Carbonic acid which is also responsible for the tangy test. Carbohydrates are the naturally occurring organic compounds and are major source of energy to our body. General formula of Carbohydrates is $C_x(H_2O)_y$.

On the basis of their molecule size Carbohydrates are classified as:-

*Monosaccharide, Disaccharides and Polysaccharides. Glucose is a Monosaccharide with formula $C_6H_{12}O_6$. It occurs in Free State in the ripen grapes, in bones and also in many sweet fruits. It is also present in human blood to the extent of about **0.1%**.*

Sucrose is one of the most useful Disaccharides in our daily life. It is widely distributed in nature in juices, seeds and also in flowers of many plants.

The main source of Sucrose is Sugar cane juice which contain 15-20% Sucrose and Sugar beet which has about 10-17% Sucrose. The molecular formula of Sucrose is $C_{12}H_{22}O_{11}$. It is produced by a mixture of Glucose and Fructose. It is non-reducing in nature whereas Glucose is reducing in nature. Cold drinks are a bit acidic in nature and their acidity can be measured by finding their pH value. The pH values also depend upon the acidic contents such as Citric acid and Phosphoric acid.

APPARATUS



- *Test Tube*
- *Test Tube Holder*
- *Test Tube Stand*
- *Stop Watch*
- *Beaker*
- *Burner*
- *pH Paper*
- *Tripod Stand*
- *China Dish*
- *Wire Ganguue*
- *Water Bath*

CHEMICALS REQUIRED



- *Iodine Solution*
- *Potassium Iodine*
- *Sodium hydroxide*
- *Fehling's A & B Solution*
- *Lime water*
- *Concentrated HNO₃*
- *Benedict Solution*
- *Ammonium Molybdate*

DETECTION OF PH

EXPERIMENT:-

Small samples of cold drinks of different brands were taken in a test tube and put on the pH paper.

The change in the colour of pH paper was noticed and was compared with the standard pH scale.

OBSERVATION:

<i>Serial Number</i>	<i>Name of the Drink</i>	<i>Colour Change</i>	<i>pH Value</i>
01	COCA COLA	PINK	2.5-3
02	SPRITE	RED	3
03	LIMCA	PINKISH	4
04	FANTA	LIGHT ORANGE	3-4

INFERENCE:

Soft drinks are generally acidic because of the presence of Citric acid and Phosphoric acid

.pHvalue of cold drink of different brands are different due to the variation in amount of acidic contents.
