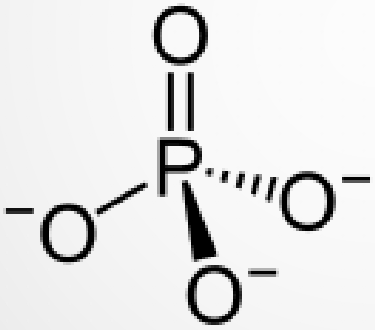
ESTIMATION OF INORGANIC PHOSPHATE IN SOFT DRINK



OBJECTIVE

- Estimation of organic phosphate in milk and soft drink

PHOSPHATE IN FOOD

- Phosphate occurs naturally in the form of organic esters in many kinds of food, including meat, potatoes, bread, and milk.

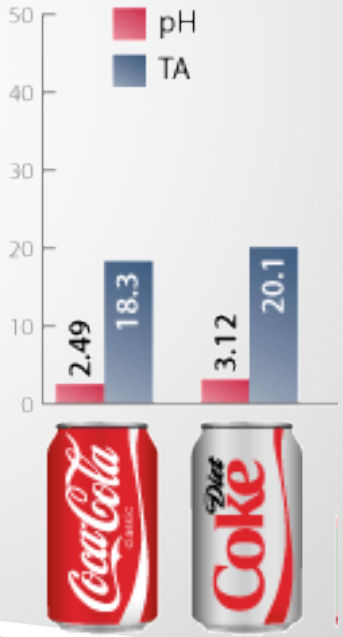
- Phosphate also used as a food additive (inorganic phosphate) as a preservative, a flavor or color enhancer, extend shelf life, and retain moisture..

- Soft drinks are complex mixtures containing a variety of substances such as colouring compounds, flavoring agents, acidifiers, sweeteners, preservatives, and caffeine.

- The most common acidifier used in soft drinks is phosphoric which gives a tangy taste in the mouth.

- Phosphoric acid can also acts as a preservative, keeping the contents of the bottle fresh.

- Due to the use of phosphoric acid, cola is a actually more acid than vinegar which no body can drink straight. But a ton of sugar, dyes and flavoring are added to mask the acidity.



PRINCIPLE:

- Phosphoric acid is colorless, they cannot be directly determined using visible-light spectrophotometry
- Instead,we will quantitatively convert them into a colored substance, whose absorban can be easily measured

1. Inorganic phosphate reacts with ammonium molybdate in an acid solution (ammoniu molybdate prepared in sulphoric acid in this experiment) to form phosphomolybdic acid
2. phosphomolybdic acid is then reduced by a reducing agent (3% ascorbic acid) to giv molybdenum blue a green/ blue color but does not affect the uncombined molybdic acid .

METHOD

	Standard	Milk sample	Soft drink sample	Water	Ammonium molybdate	Ascorbic acid
Blank	----	---	----	---	0.5 ml	0.5 ml
3 ppm	2	---	----	---		
4.5 ppm	2	---	-----	---		
6 ppm	2	---	---	---		
12 ppm	2	---	---	---		
15 ppm	2	---	---	---		
M1	---	0.5	---	1.5		
M2	---	1	---	1		
SD1	---	--	0.5	1.5		
SD2	---	--	1	1		

METHOD

- Mix throughly after each addition .
- Allow to stand for10 min
- (a deep blue/green colour should develop).
- Measure the absorbance at 650 nm.

Caculation:

Inorganic phosphate=dilution factor used x concentration

- RESULTS AND CALCULATIONS:

- Plot a graph between absorbance and concentration of phosphate in various standard solutions and obtain the calibrated curve.
- From the curve determine the amount of phosphate in the test solution.