

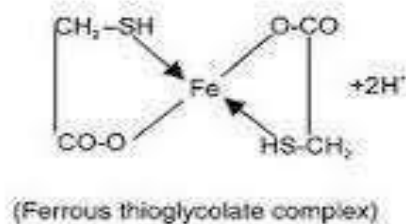
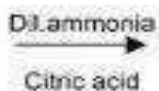
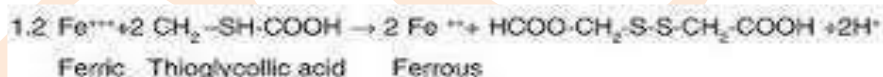
PHARMACEUTICAL INORGANIC CHEMISTRY- BP104T

UNIT: 1 (IMPURITIES IN PHARMACEUTICAL SUBSTANCES)

CLASS: 5

TOPIC: LIMIT TEST FOR IRON

- Limit test of Iron is based on the reaction of iron in ammonical solution with thioglycollic acid or mercaptoacetic acid in presence of citric acid to form iron thioglycolate which is pale pink to deep reddish purple in color. The color produced in the test is compared with the standard.
- Citric acid forms complex with ammonia as ammonium citrate which will stabilize the complex and does not allow precipitation of iron as ferric hydroxide ($\text{Fe}(\text{OH})_3$) by ammonia.
- Thioglycollic acid is used as a reducing agent and it converts ferric ions (Fe^{3+}) to ferrous ions (Fe^{2+}), if present. Ammonia is used to develop the color to the complex.
- As ferrous thioglycolate complex gives pink to reddish purple color in alkaline medium. So ammonia is used.



Procedure:

Test	Standard
Sample is dissolved in specific amount of water and then volume is made up to 40 ml	2 ml of standard solution of iron diluted with water up to 40ml
Add 2 ml of 20 % w/v of citric acid (iron free)	Add 2 ml of 20 % w/v of citric acid (iron free)
Add 2 drops of thioglycollic acid	Add 2 drops of thioglycollic acid
Add ammonia to make the solution alkaline and adjust the volume to 50 ml	Add ammonia to make the solution alkaline and adjust the volume to 50 ml
Keep aside for 5 min	Keep aside for 5 min

Color developed is viewed vertically and compared with standard solution	Color developed is viewed vertically and compared with standard solution
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Iron Standard Solution (20 ppm Fe): Dilute 1 volume of a 0.1726 per cent w/v solution of ferric ammonium sulphate in 0.05 M sulphuric acid to 10 volumes with water. Contains iron in ferric state. Earlier ammonium thiocyanate reagent was used for the limit test of iron. Since thioglycolic acid is more sensitive reagent, it has replaced ammonium thiocyanate in the test.

Observation: The purple color produce in sample solution should not be greater than standard solution. If purple color produces in sample solution is less than the standard solution, the sample will pass the limit test of iron and vice versa.

2 MARKS QUESTIONS

1. Write the principle involved in limit test for iron
2. Explain the role of reagents used in limit test for iron

5 MARKS QUESTIONS

1. Write the procedure & principle involved in limit test for iron.