

CHAPTER 29

S U M M A R Y

1. The objectives of the present study are disclosed at the very first outset.

2. The history of iron therapy is described to reveal how the iron therapy in iron deficiency anaemia originated before centuries and then gradually modified till the present day therapy.

3. Iron metabolism is described in full detail along with the factors affecting the iron absorption. The methods for studying iron absorption are considered. The sources of iron and the iron requirements are described fully.

4. The various processes involved in the iron metabolism are represented diagrammatically.

5. The intracellular transport of iron from intestine to blood stream (Mucosal Block) is represented diagrammatically in a simplified and enlarged form.

6. Serum iron and all the factors affecting the serum iron values are thoroughly discussed.

7. Pharmacology of Ferrous Fumarate is described in full detail.

8. Different aspects of iron deficiency anaemia are described.

9- The amount of blood loss in cases of Ankylostomiasis as given by various investigators is taken into account.

10. The plan of work is systematically outlined in full details along with the procedure of "preparation of the patients."

11. Analysis of vegetarian high protein diet (AHPD) and non-vegetarian high protein diet (BHPD) is given in a tabular form for comparison.

12. Modes of different investigations are described in brief.

13. A complete list of all the materials required for the purpose of serum iron estimation is given.

14. The method for estimation of elemental iron per tablet of an iron compound is modified during this study and results are shown in a tabular form.

15. Different methods for the serum iron estimation are briefly discussed.

16. All the important factors required to be fulfilled for carrying out the comparative study are taken into consideration.

17. First 20 cases were taken up as trial cases for the following purposes :

- (a) To get acquainted with the whole set-up.
- (b) To establish the accuracy of serum iron estimation technique.
- (c) To find out the hours of peak serum iron level after the administration of ferrous sulphate.
- (d) To find out the hours of peak serum iron level after the administration of ferrous fumarate.

18. Out of these 20 trial cases, 10 cases were given ferrous sulphate (180 mg. of elemental iron) and 10 cases were given ferrous fumarate (180 mg. of elemental iron). Blood samples were collected at the end of 3 hours, 4 hours and 5 hours after the administration of drug and serum iron levels were estimated. It was found that the peak level reaches after 4 hours in case of ferrous sulphate as

well as in case of ferrous fumarate.

19. These 20 trial cases were excluded from 40 study cases.

20. Ferrous Fumarate, a new oral iron preparation, was compared with ferrous sulphate in a comparative clinical therapeutic trial in treatment of iron deficiency anaemia under standard conditions.

21. 40 adult, male and female, patients of iron deficiency anaemia with haemoglobin level between 3 to 6 gm. per cent attending the out-patient Department of S.S.G.Hospital, Baroda were selected and admitted for the study.

22. Cases with Ankylostomiasis were first treated with Tetrachlorethylene and the irradiation of the parasites was confirmed by repeated stool examination.

23. The cases were divided into Two Series. One series was treated with ferrous Sulphate and other with ferrous fumarate.

24. The routine haematological investigations were carried out initially and at weekly intervals. The therapeutic responses obtained after administration of ferrous sulphate and ferrous fumarate were assessed and compared.

25. Besides the routine haematological and other investigations, serum iron estimations were also conducted on

first and twenty-first day of treatment.

26. Blood samples were collected on first ~~and~~ day of treatment at 0 hours (fasting) and 4 hours and 8 hours after the administration of respective iron preparation and serum iron was estimated. Similarly, the three samples were collected on 21st day of treatment and serum iron was estimated.

27. The method described by Marrack (1956) was adopted for Serum Iron Estimation after it was modified and simplified during the course of this study.

28. The readings of serum iron estimations were taken immediately(after 10 minutes and within 30 minutes of the development of the colour)and also 24 hours after the development of the colour. The immediate readings and the readings after 24 hours were compared in order to judge the stability of the colour.

29. The precautions to be taken for preserving the tubes with their contents for taking the readings after 24 hours and also the precautions to be taken at the time of taking the after-24 hours readings are fully described.

30. The methods for the preparation of reagents, preparation of standards, preparation of glassware and standardisation are all simplified and/or modified and described in

full detail.

31. The important steps involved in the process of serum iron estimation, preparation of reagents, preparation of standards, preparation of glassware and standardisation are all demonstrated photographically.

32. All the pre-requisites necessary for serum iron estimation are given. The criteria for selection of normal subjects for serum iron estimation are fully described.

33. Twelve lead electrocardiograms of 40 cases of severe anaemia are studied and the abnormalities are recorded.

34. The results of various investigations are presented in tabular form separately. Moreover, the comparative haematological response and comparative serum iron curves obtained in first pair of each treatment-group of patients are represented photographically.

35. The patients were followed for a period of three weeks and the results of both the series (series A and Series B) are thoroughly studied, analysed and compared.

36. Rise of haemoglobin in gm. per cent per week is calculated for each patient and the figures in both the series are compared.

37. Percentage rise of haemoglobin per day is calculated and the figures in both the series are compared.

38. Percentage utilisation of iron is calculated according to the formula and the g figures obtained in case of Ferrous Sulphate are compared with those of Ferrous Fumarate.

39. Rise of P.C.V. and various Indices per week are calculated for each patient and the figure in both the series are compared.

40. The minimum, maximum and mean rise of Haemoglobin, R.B.C., Colour index, P.C.V. and all indices are calculated for each patient and the figures in both the series are compared.

41. The rise in Serum Iron levels of all the patients is calculated and the figures obtained in case of ferrous sulphate series are compared with those of ferrous fumarate series.

42. The fall in serum iron levels of all the patients is calculated and the figures obtained in both the series are compared.

43. Range and mean of serum iron levels in male and female patients are calculated and the results of series A are compared with those of series B.

44. The findings of serum iron estimation in normal subjects (Normal adult male and normal adult female) are presented in a tabular form showing that the values in females are lower than those in males.

45. The findings of serum iron estimation in anaemic subjects (Male adult patients and female adult patients of iron deficiency anaemia) are presented in a tabular form showing that the values are lower in females than in males.

46. The results of electrocardiographic studies and sternal puncture studies are separately presented in tabular forms.

47. Both the iron preparations viz. Ferrous Sulphate and Ferrous Fumarate were tolerated well with a remarkable **absence** of gastro-intestinal side-effects.

48. The various haematological responses obtained after Ferrous Sulphate administration are much better than those obtained after Ferrous Fumarate administration.

49. The total number of various photographs amounts to about 100.

50. The study include a total number of 100 subjects as follows :

(a)	Trial cases	20 :	10 for Ferrous sulphate 10 for Ferrous Fumarate
(b)	Study cases	40 :	20 Male Adult patients 20 Female adult patients
(c)	Normal subjects	40 :	20 Normal Adult Males 20 Normal Adult Females
	TOTAL		<u>100</u>