

Contents

1	Introduction	1
	References.....	5
2	Biochemistry of Iron	7
	2.1 The Heme Group.....	8
	2.2 Myoglobin and Hemoglobin.....	9
	2.3 Ferritin and Hemosiderin.....	12
	2.4 Transferrin.....	14
	2.5 Iron Enzymes.....	15
	2.6 Iron in Brain Metabolism.....	17
	2.7 Iron in the Immune System.....	22
	References.....	26
3	Systemic Iron Homeostasis	29
	3.1 Iron Absorption and Recycling.....	29
	3.2 Molecular Mechanism of Iron Reduction.....	31
	3.3 Regulation by Hepcidin.....	34
	References.....	40
4	Anemia and Iron Deficiency	41
	4.1 Global Issues.....	42
	4.2 Other Causes.....	44
	References.....	47
5	Diagnostics of Iron Deficiency States	49
	5.1 Basic Diagnostics.....	49
	5.2 Further Diagnostics.....	52
	References.....	59
6	The Iron Requirement	61
	6.1 International Reference Values.....	61
	6.2 Nutrient Reference Value for the Daily Intake of Iron.....	70
	6.3 Upper Limit of Iron Intake.....	70
	References.....	75

7	Bioavailability	77
	7.1 Species Analysis of Iron in Foodstuffs	81
	7.2 Dietary Components and Homeostasis	86
	7.3 Properties and Uptake of Ferritin	89
	References	96
8	Diet for Iron Deficiency	99
	8.1 Iron Content in Foodstuffs	99
	8.2 The Iron Negative List	120
	8.3 Examples of Dishes Containing Iron	124
	8.4 Rules of Thumb for an Optimal Iron Supply	127
	References	129
9	Iron and Special Diets	131
	9.1 Vegetarian and Vegan Diet	131
	9.2 Childhood, Youth and Old Age	141
	9.3 Pregnancy and Breastfeeding Period	143
	9.4 Sports Activities	144
	References	146
10	Iron Supplementation	149
	10.1 Medicinal Products	149
	10.2 Food Supplements	151
	References	154
	Index	157