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Elements
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Inorganic Chemicals
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Nota di contenuto	<p>Chemistry and Biochemistry of Oxygen Therapeutics; Contents; List of Contributors; Preface; 1. Introduction; References; Part I. Oxygen: Chemistry, Biochemistry, Physiology and Toxicity; 2. Hemoglobin Reactivity and Regulation; 2.1 Introduction; 2.2 Oxygen Loading and Transport; 2.3 NO Reactivity with Hb; 2.4 Hb Oxidation; 2.5 Nitrite Reactivity with Hb; 2.6 Amino-acid Determinants of Hb Reactivity: Natural and Engineered Hbs; 2.6.1 Modulation of Oxygen Affinity and Cooperativity; 2.6.2 NO Reactivity and Oxidation; 2.7 Conclusion; Acknowledgments; References</p> <p>3. The Major Physiological Control Mechanisms of Blood Flow and Oxygen Delivery 3.1 Introduction; 3.2 Autoregulation of Blood Flow to Changes in Perfusion Pressure; 3.3 Metabolic Regulation of Blood Flow; 3.4 O₂ Transport; 3.5 O₂ Delivery; 3.6 Endothelial Control of Vasomotor Tone; 3.7 Effect of Cell-free Hb on Endothelial Function; 3.8 Hypoxic Hypoxia; 3.9 Carbon Monoxide Hypoxia; 3.10 Anemia; 3.11 Conclusion; References; 4. The Main Players: Hemoglobin and Myoglobin; Nitric Oxide and Oxygen; 4.1 Introduction; 4.2 Role of Mammalian Mb in O₂ Homeostasis</p> <p>4.3 What's Missing in the Mb Knockout Mouse 4.4 Evolutionary Origins of Mb and the Nitrogen Cycle; 4.5 Human Hb: Evolved Sensor of pO₂ and Redox; 4.6 Broad Reactivity and Influence of NO: Lessons from the Microcosm Hb; 4.7 Some Fish Demonstrate a Fundamental "Need" for Hb-dependent NO Cycling, as in Humans; 4.8 Reactions of NO with Hb that Preserve NO Bioactivity; 4.9 Mammalian RBC/Hb.NO Interactions; 4.10 A Mutant Mouse Challenges the SNO-Hb Hypothesis, but does not Overthrow it; 4.11 Signaling by Hb-derived SNO: A Metabolically Responsive, Regulated Pathway</p> <p>4.12 Signaling by Hb-derived SNO: Pathway Complexity Revealed by Multiple Defects in Disease States 4.13 Therapeutic Implications of the Hb.NO Signaling System; 4.14 HBOCs, NO, and SNO; 4.15 Other Gaseous Hb Ligands of Potential Therapeutic Significance; 4.16 NO-related Enzymatic Activities of Hb: Reconciling Nitrite Reductase and SNO Synthase Functions; 4.17 Measuring Biologically Relevant Hb.NO</p>

Adducts; 4.18 Conclusion; Acknowledgments; References; 5. The Role of Reactive Oxygen and Nitrogen Species in Ischemia/Reperfusion Injury; 5.1 Introduction
5.2 Redox System and Free Radicals in Biological Systems5.3 Pathophysiology of Ischemia/Reperfusion Injury; 5.3.1 Cell Death; 5.3.2 The Inflammatory Response; 5.4 Protection Against I/R Injury; 5.4.1 Ischemic Pre- and Post-conditioning; 5.4.2 Pharmacological Conditioning; 5.4.2.1 The Protective Role of ROS and Antioxidants; 5.4.2.2 The Protective Role of NO; 5.4.2.3 NO-based Therapies for I/R Injury; 5.5 Conclusion; Acknowledgments; References; Part II. Medical Needs for Oxygen Supply; 6. Acute Traumatic Hemorrhage and Anemia; 6.1 Introduction; 6.2 Blood Transfusion in Trauma
6.2.1 Massive Transfusion

Sommario/riassunto

Human blood performs many important functions including defence against disease and transport of biomolecules, but perhaps the most important is to carry oxygen - the fundamental biochemical fuel - and other blood gases around the cardiovascular system. Traditional therapies for the impairment of this function, or the rapid replacement of lost blood, have centred around blood transfusions. However scientists are developing chemicals (oxygen therapeutics, or "blood substitutes") which have the same oxygen-carrying capability as blood and can be used as replacements for blood transfusion or to t
