Abstract

Cancer is a complex disease characterized by uncontrolled cell growth and proliferation. Metabolic reprogramming, a hallmark of cancer cells, enables them to adapt to their demanding energetic and biosynthetic needs. This review explores the intricate metabolic pathways involved in cancer cell proliferation and their implications for therapeutic strategies. Key pathways discussed include glycolysis, the pentose phosphate pathway, amino acid metabolism, lipid metabolism, and mitochondrial function. Understanding these metabolic alterations provides insights into the vulnerabilities of cancer cells and highlights potential targets for therapeutic intervention.

Keywords: Cancer metabolism; Glycolysis; Pentose phosphate pathway; Amino acid metabolism; Lipid metabolism; Mitochondrial function; erapeutic targets

Introduction

e aberrant metabolic phenotype of cancer cells has been recognized for decades as a hallmark of cancer. Otto Warburg rst observed enhanced glycolysis in cancer cells even in the presence of oxygen, known as the Warburg e ect. Since then, extensive research has revealed that cancer cells undergo widespread metabolic reprogramming to support their rapid proliferation and survival [1]. Metabolic pathways not only provide energy but also generate biomass necessary for cell growth and division. is review examines how dysregulated metabolic pathways contribute to cancer cell proliferation