THE INFLUENCE OF METFORMIN ON CANCER METABOLISM: A STUDY OF THE OXIDATIVE STRESS PARAMETERS

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In recent years, several studies have reported that the anti-diabetic drug Metformin could possibly be responsible for reducing the incidence of various types of cancer in diabetic patients. These observations have led to many researches about which mechanism of action would be taking place. In the 1920’s, O. Warburg had shown that, independently of oxygen presence, glucose metabolism in proliferative cells rely on aerobic glycolysis, regardless of the diminished ATP production when compared to oxidative phosphorylation. In mammalian cells this effect is known as ‘Warburg effect’ and had strong similarities with Saccharomyces cerevisiae cells metabolism. The present study aims to investigate the role of Metformin as an anti-cancerous agent in terms of the metabolic parameters; specifically, the objective is to understand its effect on oxidative stress of tumour cells. Using Saccharomyces cerevisiae as an experimental model, we observed that Metformin plays a role on influencing lipid peroxidation and protein carbonylation, demonstrating an increased rate of these effects. The influence of Metformin in the growth curve of the yeast also was determinate. These results will allow further correlations between a lower degree of proliferative malignant cells in patients in use of Metformin.

Keywords: Metformin, Cancer, Oxidative stress

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