MARSCHNER SESSION **PLANT-BASED DIETARY INTERVENTION FOR GLYCAEMIC CONTROL IN INDIVIDUALS WITH TYPE 2 DIABETES**

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Plant-based dietary choices are crucial in improving metabolic health and managing chronic diseases. Diabetes mellitus (DM) is a chronic metabolic disorder affecting millions of people worldwide, leading to significant health complications and significantly contributing to morbidity and mortality. Dietary habits influence glycaemic control, with refined carbohydrate intake contributing to postprandial hyperglycaemia. Replacing conventional carbohydrate sources with nutrient-dense, plant-based alternatives is a promising strategy for diabetes management. Lentils, rich in fibre, protein, and bioactive compounds, have been associated with improved glycaemic response and overall metabolic health. This study investigates the impact of replacing bread with a lentil-based muffin on glucose metabolism in Portuguese individuals with type 2 diabetes (T2DM) aged between 45 and 75 years old. A two-week crossover clinical trial was conducted with these patients.

In the first week, participants consumed a standard breakfast and afternoon snack of bread with yoghurt or milk. In the second week, the bread was substituted with a lentil-based muffin, formulated without added sugar, while maintaining a similar macronutrient composition. Throughout the study, participants used the FreeStyle Libre system to monitor interstitial glucose levels continuously. Saliva, urine, and blood were collected at the end of each intervention period (after week one and at the end of week 2) to assess metabolic responses. Replacing bread with the lentil-based muffin significantly improved glucose control and led to a significant reduction in blood glucose levels during breakfast, as recorded by the FreeStyle Libre system. These dietary changes not only influenced interstitial glucose levels during breakfast but also had an effect throughout the day, leading to better glucose control. No significant differences were observed in blood clinical analyses. However, insulin levels showed a decreasing tendency after the muffin intervention. Additionally, participants reported reduced hunger levels during the muffin consumption week, suggesting enhanced satiety. These results highlight the potential of a simple plant-based dietary modification in diabetes management. Replacing refined carbohydrate sources, a typical Portuguese breakfast, with fibre- and protein-rich plant-based alternatives, such as lentil-based muffins, may contribute to better glycaemic control and appetite regulation. These findings reinforce the importance of dietary strategies in improving metabolic outcomes for individuals with T2DM and underscore the challenge of dietary habit changes in long-term disease management.