EFFECT OF THE INTAKE OF HIGH-SDS PRODUCT ON METABOLIC AND INFLAMMATORY MARKERS IN SUBJECTS WITH IMPAIRED GLUCOSE TOLERANCE

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INTRODUCTION

• Several studies performed in Healthy normal-weight subjects have shown that the ingestion of high-Slowly Digestible Starch (SDS) cereal products led to lower postprandial glycemic response with a non exacerbated insulin response. A study in overweight subjects confirmed this effect.
• The etiology of diabetes is a continuum from healthy status to diseased status : what is the effect of high-SDS cereal product ingestion on glycemic response in subjects with impaired glucose metabolism and what is the impact on inflammatory process & oxidative stress ?

OBJECTIVES

Our objective was to compare metabolic and inflammatory responses following the ingestion of cereal products high in Slowly Digestible Starch (SDS) in subjects with impaired glucose tolerance.

METHODS / DESIGN

• Mono-center, randomized, open study
• Inclusion of overweight subjects with impaired glucose tolerance
• Cereal products consumed at breakfast for 3 weeks prior each test session
• 3 test sessions : all meals provided 54g of available CHO
  - A breakfast including a biscuit high in SDS (SDS = 16.9 g/100 g and %SDS/av. starch = 43.2%)
  - A breakfast including a rusk low in SDS (SDS = 0.5 g/100 g and %SDS/av. starch = 0.8%)
  - A glucose solution
• 21 subjects recruited and 20 completed the study (age : 45.9 ± 9.6 y, BMI : 29.7 ± 2.3 kg/m² and CRP range : 0.1 – 9.2 mg/L)

RESULTS

Comparing the 2 cereal products, postprandial glycaemia over the 2 first hours following the consumption of high-SDS biscuit was 32% lower compared to low-SDS rusk

Postprandial insulinemia after ingestion of the high-SDS biscuit was lower compared to glucose solution and low-SDS rusk

• No difference on CRP, IL-6 and TNFα.
• No effect on GSSG and on urinary isoprostanes.
• Higher GSH and a lower MDA with glucose solution compared to cereal products; no difference between cereal products.

CONCLUSIONS

• High-SDS biscuits induced the lowest postprandial glycemic response associated with the lowest insulin demand in overweight subjects with impaired glucose tolerance
• No effect of lower glycemic response and postprandial inflammatory marker improvement (CRP, IL-6, TNFα).
• Higher values even at baseline for MDA and GSH with the two cereal products compared to the glucose solution : should it be a transitory pro-inflammatory effect?