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Effect of wine on postprandial serum insulin, plasma glucose, serum IgA and insulin sensitivity as all wines are not the same

Statement of the Problem: The effect of wine on glucose metabolism and utilization in non-diabetic individuals is largely unknown and requires investigation. The purpose of this study is to compare the effect of red and white wine on postprandial glucose metabolism and utilization in non-diabetic individuals.

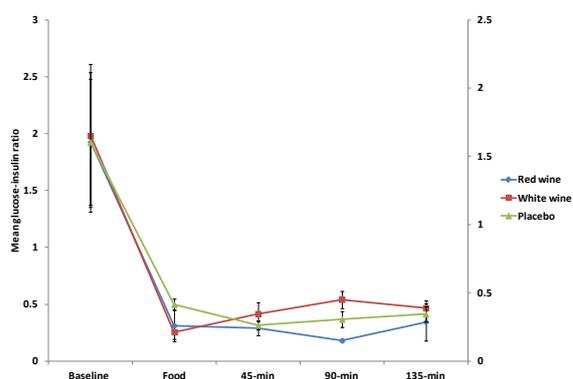
Methodology & Theoretical Orientation: This study utilized a 3x4 mixed design. The ‘between subjects’ factor was trial (white wine, red wine, placebo) and the ‘within subjects’ factor was time (Food, 45-min, 90-min, 135-min). The experimental procedure required 24 non-diabetic males to consume food for 45-min and then ingest 4x standard units (40 g of alcohol) of white wine (n=8), red wine (n=8) or the equivalent amount of placebo (n=8) over a period of 135 minutes. Measures of serum insulin, plasma glucose and serum immunoglobulin A (IgA) were taken upon arrival (Baseline), after the meal (0 minutes) and during beverage consumption (45 minutes, 90 minutes and 135 minutes).

Findings: Significant trial differences were observed when data was compared. The level of postprandial: Plasma glucose was significantly reduced with red wine at 45 minutes (<13 g of alcohol); serum insulin was significantly reduced with white wine at 45 minutes (<13 g of alcohol); serum IgA became significantly elevated with white wine at 45 minutes (<13 g of alcohol). Moreover, a significant improvement in insulin sensitivity was only noted with white wine at 90 minutes (<30 g of alcohol).

Conclusion & Significance: Both red wine and white wine can alter postprandial glucose metabolism and utilization in non-diabetic individuals. However, the effect of red wine and white wine is not the same: white wine after a meal improves insulin sensitivity and promotes the development of a transient pseudo-diabetic condition; red wine after a meal alters the glucose-insulin feedback mechanism, reduces insulin sensitivity and promotes the development of a transient pseudo-hypoglycemic condition. Thus, consuming wine alone after a meal should not be encouraged in non-diabetics.

Image

Figure 1: Mean G/I ratio measured before (Baseline) and after food (Food) and after consumption of 40 g alcohol or placebo (45 minutes-135 minutes). Data is shown as the Mean±SEM (n=24).



Biography

Anna Kokavec is a Registered Psychologist and a member of the Australian Psychological Society. She has a PhD in Biological Psychology from La Trobe University, Australia and is currently employed as a Senior Lecturer in the School of Health, University of New England, Australia. She previously held academic positions at La Trobe University (Neuroscience and Research Methods) and University of Newcastle (Health Behavior Science). She has spent the last 20 years investigating the effects of commercially available alcohol on the inter-relationship between hypothalamic-pituitary-adrenal axis, energy metabolism/utilization and immune system activity. Recently, her interests have been extended to include investigation of a possible link between insulin sensitivity, nutrition and migraine. She is the author of more than 20 papers in highly respected international journals and is the listed first author for two original hypotheses aimed at explaining the effect of alcohol on biochemical processes.

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