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Appendix 1

Stage 1 Data

Stage 1 was designed to evaluate the glycaemic response of three prototype nutritional beverages developed with the aim of blunting post-prandial hyperglycaemia in four groups of women (n=10 per group) following a meal tolerance test (MTT): lean non-pregnant [LP] (BMI ≥18.5-≤24.9kg/m^2), obese non-pregnant [ONP] (BMI ≥30kg/m^2), lean pregnant [LP] (BMI ≥18.5-≤24.9kg/m^2 – self reported pre-pregnancy BMI] and obese pregnant [OP] (BMI ≥30kg/m^2 -self reported pre-pregnancy BMI).

Each woman consumed the three beverages (A, B, D) on independent study days to the clinical research facility with a minimum 48 hour washout period. A fourth beverage (C) was discarded subsequent to early palatability testing.

For the MTT, each supplement drink provided the equivalent of 46g of carbohydrate in a total volume of 500ml. Owing to the different CHO composition of the supplements per 8oz carton (237ml) (Table 1), preparation was modified to ensure standardisation.

Table 1 Macronutrient and detailed carbohydrate composition of beverages used in stage 1

	(A) Low fat	**(B) *High Fat***	***(D) Control***
Volume of serving (oz)	8	4	8
Glycaemic load (8oz)*	778	1492	2280
Macronutrient per 8oz			
Calories (Kcal)	149	303	152
Total fat (g)	0.5	7	2
% calories from fat	3	20.8	11.8
Protein (g)	12	14	9.5
% calories from protein	32.3	18.5	25
Carbohydrate (CHO) (g)	24	46	24
% calories from CHO	64.6	60.7	63.2

Rapid digesting (%)	13	13	100
Slow digesting (%)	68	68	-
Non-digesting			
Resistant maltodextrin (%)	15.5	15.5	0
Fructooligosaccharides (%)	3.5	3.5	0

*Total glycemic load (GL) was calculated by first multiplying the amount of each carbohydrate contained in a daily dietary intake by its glycemic index (with the use of glucose as the reference food), then by summing the values from all CHO sources. Daily dietary glycemic load (8oz) thus represents the quality and quantity of carbohydrate intake and the interaction between the two.

One-way ANOVA test with Tukey's multiple comparison analysis confirmed a consistent reduction in iAUC for B versus D (control) across all groups notably in the obese pregnant group. No significant differences were found between the iAUC for A and B (Table 2).

When comparing the glucose response of supplement B across the four categories of women, the iAUC was greatest in the obese pregnant group compared to lean and non-pregnant women.

Table 2 Comparison between A, B and D within each study group

One way ANOVA (Tukey's multiple comparison test)	**Mean Difference of iAUC per participant**	**P value**	**95% CI of difference**
Lean non-pregnant (LNP) BMI 22.5(kg/m^2) (1.5)			
A vs B A vs D B vs D	0.42 -0.18 -0.59	0.08 0.06 0.002	-0.04 to 0.87 -0.63 to 0.28 -1.05 to -0.14
Lean pregnant (LP) BMI 22.1 kg/m^2 (1.6)			
A vs B A vs D B vs D	-0.06 -0.79 -0.73	0.56 0.004 0.004	-0.67 to 0.55 -1.39 to -0.18 -1.33 to -0.12

Obese non-pregnant (ONP) BMI 35.3 kg/m^2 (4.9)			
A vs B A vs D B vs D	0.06 -0.44 -0.50	0.38 0.03 0.01	-0.44 to 0.55 -0.94 to 0.05 -0.99 to -0.00
Obese pregnant (OP) BMI 38.5 kg/m^2 (6.7)			
A vs B A vs D B vs D	0.25 -0.26 -0.51	0.38 0.08 0.03	-0.18 to 0.67 -0.69 to 0.17 -0.93 to -0.08

*BMI and age given as mean (SD), ethnicity given as (n).

FBG: fasting blood glucose given as mean (SEM) in mmol/l. iAUC: incremental area under the curve given as mean (SEM) in mmol/l/240min

The timing of the post-prandial peak for all supplements was comparable at approximately 60 minutes with the greatest increment recorded for D on each occasion (Figure 1 to **Figure 4**).

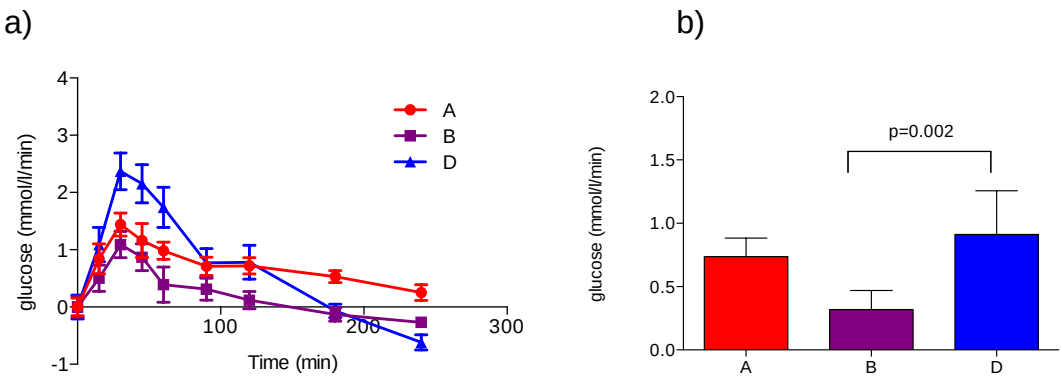

Figure 1 a) Line graph and b) box plot of glucose iAUC lean non pregnant (LNP) women for A, B & D (n=10). Error bars represent mean± SEM

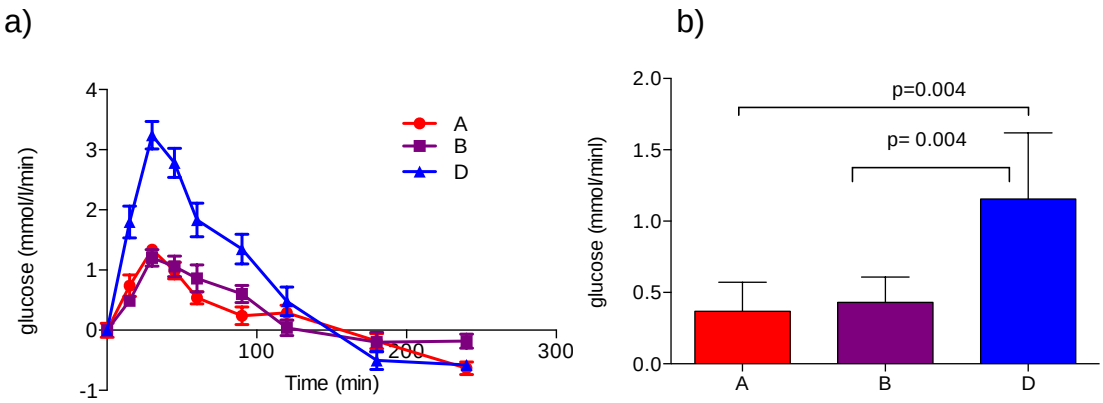

Figure 2 a) Line graph and b) box plot of glucose iAUC for lean pregnant (LP) women for A, B & D (n=10). Error bars represent mean± SEM.

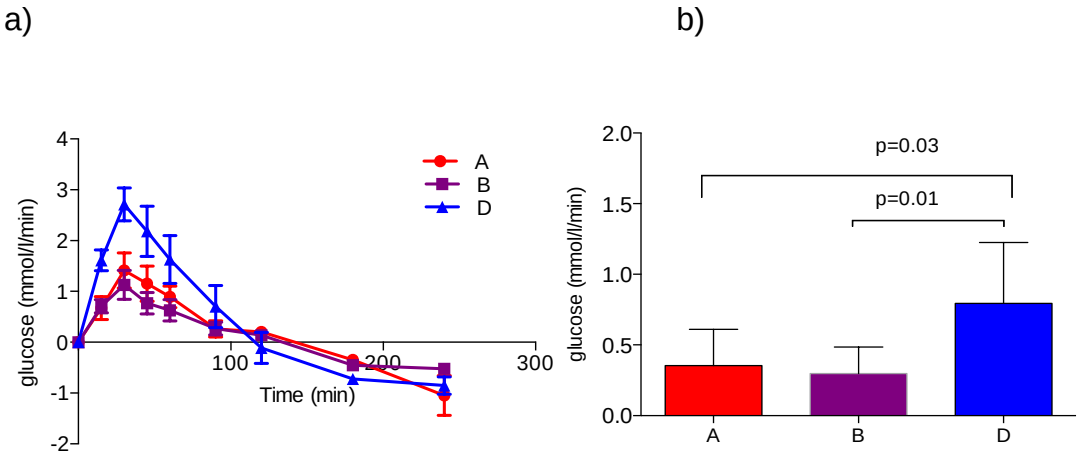

Figure 3 a) Line graph and b) box plot of glucose iAUC for obese non pregnant (ONP) women for A, B & D (n=10). Error bars represent mean± SEM.

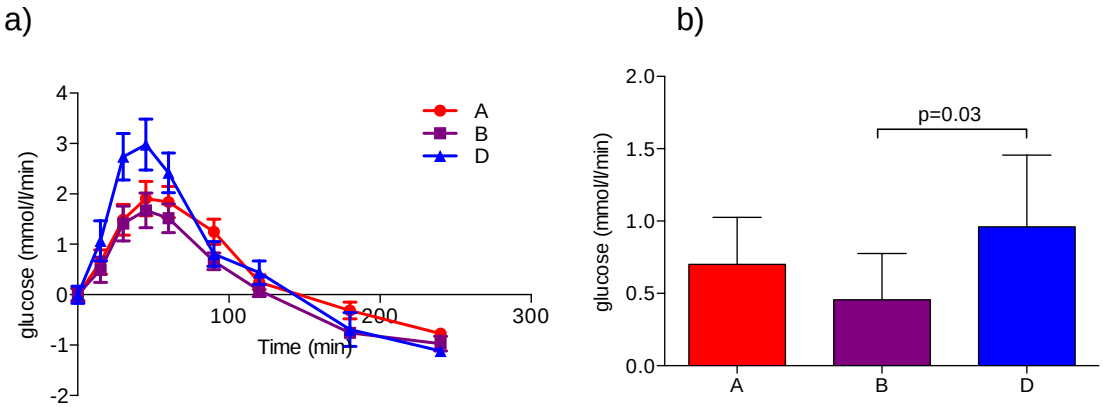

Figure 4 a) Line graph and b) box plot of glucose iAUC for obese pregnant (OP) women for A, B & D (n=10). Error bars represent mean± SEM.

Appendix 2

An example of the menu choice offered to the participants is detailed below. In the pre-study visit, food preferences were documented, including allergies and religious requests. In such circumstances, slight deviation from the set menus was made following review by the research dietician to ensure any changes complied with the controlled diet.

Table 1 Alternative Meal Choices (Menu A) for CRF study days 2 and 6 (Friday and Tuesday)

MENU A-Day 2 & 6	**Energy (Kcal)**	**Total CHO (g)**	**Total sugars (g)**	**Total protein (g)**	**Total fat (g)**	**Total fibre (g)**
08.00 BREAKFAST						
Rice krispies (20g) pack)	73	17	2	2	0	0
Intervention or control supplement	152	23	17	7	4	2
Meal total	**224**	**40**	**19**	**9**	**4**	**2**
11.00 SNACK						
Muller Amore Spanish Orange Yogurt (150g)	218	26	24	4	11	0
13.00 LUNCH						
John west snack pot Mediterranean style tuna salad	211	22	10	19	4	5
Poppy & sesame thin crackers x 4	80	10	0	2	4	1
Sainsbury's olive spread (15g)	80	0	0	0	9	0
Meal total	**371**	**32**	**10**	**20**	**17**	**6**
15.00 AFTERNOON						
Intervention or control supplement	152	23	17	7	4	2
18.30 DINNER						
Sainsbury's mushroom risotto (400g)	502	65	4	9	22	2
Yeo Valley Organic Natural Yogurt (150g)	124	10	10	7	6	0
Nature's Finest Tropical Fruit Salad pot (in juice) (113g)	67	14	13	3	0	1
Meal total	**693**	**89**	**27**	**19**	**28**	**3**
20.30 SUPPER & MISC						
Philadelphia tub (35g) snack	55	1	1	3	4	0
Philadelphia tub (35g) snack	55	1	1	3	4	0
Poppy & sesame thin crackers x 4	80	10	0	2	4	1
Meal total	**190**	**12**	**3**	**7**	**12**	**1**
Meal total excluding supplements	**1478**	**173**	**59**	**55**	**61**	**12**
Total	1848	222	99	66	75	13

Dietary data were generated using the WISP dietary data software