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Abbreviations

iAUC – incremental area under the curve

iPeak – incremental peak rise

OBG – Oat β-glucan

PRISMA – Preferred reporting items for systematic review and meta-analysis protocols

RoB – Risk of bias

RoM – Ratio of means

Supplementary Table 1. Search strategy

MEDLINE 1946 to Oct 2, 2019	**EMBASE 1946 to October 2, 2019**	**Cochrane Central Register of Controlled Trials Through Oct 2, 2019**
1. oat.tw.	1. oat.tw.	1. Avena.ti,ab,kw.
2. Oats.tw.	2. Oats.tw.	2. Oat.ti,ab,kw.
3. Avena/	3. Avena/	3. Oats.ti,ab,kw.
4. Avena*.tw.	4. Avena*.tw.	4. Beta-glucans/
5. beta glucan/	5. beta glucan/	5. Beta glucan*.ti,ab,kw.
6. beta glucan*.mp.	6. beta glucan*.mp.	6. or/1-5
7. b-blucan*.mp.	7. b-blucan*.mp.	7. Glucose/
8. b-blucan*.mp.	8. b-blucan*.mp.	8. glycaemic.mp.
9. or/1-8	9. or/1-8	9. glycemic.mp.
10. exp Glucose/	10. exp Glucose/	10. glycemia.mp.
11. glycaemic.mp.	11. glycaemic.mp.	11. Insulin/
12. glycemic.mp.	12. glycemic.mp.	12. exp Glucose Tolerance Test/
13. glycaemia.mp.	13. glycaemia.mp.	13. OGTT.mp.
14. glycemia.mp.	14. glycemia.mp.	14. or/7-13
15. exp Glucose Tolerance Test/	15. exp Glucose Tolerance Test/	15. 6 and 14
16. OGTT.mp.	16. OGTT.mp.	
17. or/10-16	17. or/10-16	
18. 9 and 17	18. 9 and 17	
19. limit 18 to animals	19. limit 18 to animals	
20. 18 not 19	20. 18 not 19	

Supplementary Table 2. Study quality criteria

#	Criteria
1	Was the amount of oat β-glucan/oat bran specified?
2	Were intervention and comparator meals consumed in different orders?
3	Were the macronutrient compositions of the intervention and comparator meals specified?
4	Was the quantity of available carbohydrate in intervention and comparator meals specified?
5	Was the molecular weight of oat β-glucan specified?
6	Were intervention and comparator meals consumed with a beverage of ≥200ml?
7	Was follow-up duration ≥120mins?
8	Was blood collected ≥7times?
9	Were duplicate fasting samples collected?
10*	Was the methodology to calculate incremental area under the curve (iAUC) described?
11	Were participants provided with ≥3 of the following study visit preparation instructions? • Fasting for 10-14h • No unusual food intake the day before study visit • No unusual physical activity the day before study visit • No alcohol intake the day before study visit • Provided standard dinner or advised participants to consume usual dinner prior to study visit

*only applied to iAUC glucose and insulin

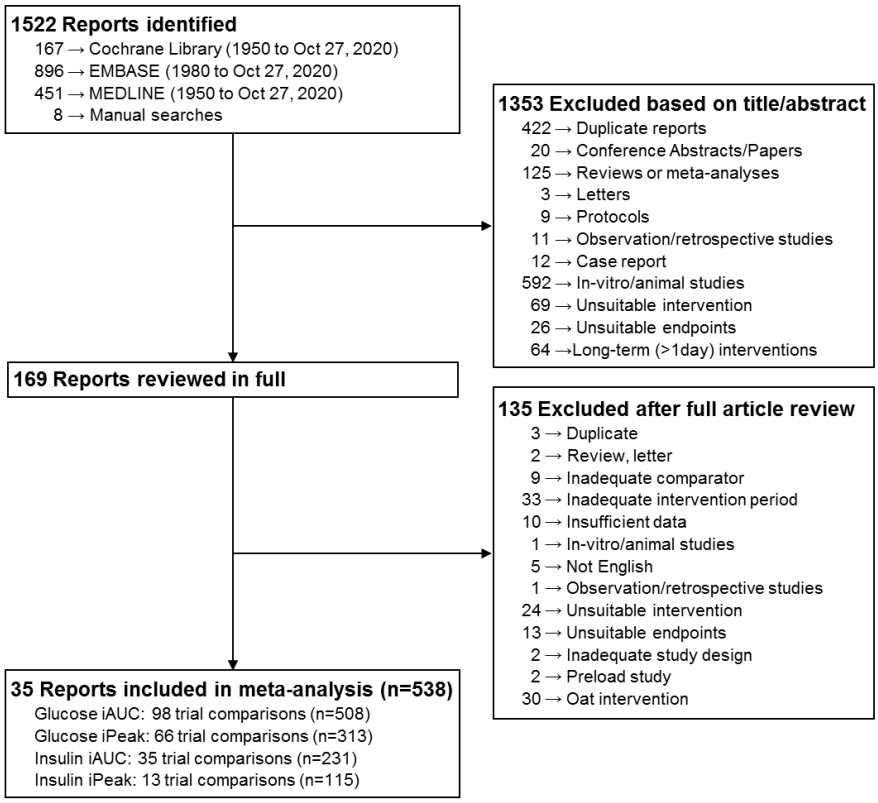
Supplementary Figure 1. Formulas to calculate ratio of means (RoM) and the standard error of the RoM.

$$\ln(RoM) = ln(\frac{mean\ [intervention]}{mean\ [control]})$$

$$SE\ [\ln(RoM)] = \sqrt{\frac{SD^2\ [intervention]}{n\ [pairs] \times mean^2\ [intervention]} + \frac{SD^2\ [control]}{n\ [pairs] \times mean^2 [control]} - \frac{2 \times r \times SD\ [intervention] \times SD\ [control]}{mean\ [intervention] \times mean\ [control] \times n\ [pairs]}}$$

The natural logarithm transformed ratios were aggregated across studies using the standard generalized inverse variance method. The pooled transformed ratio and pooled SE of the logarithmic-transformed ratio were then back transformed to obtain a pooled ratio and 95% CI [29-31] "r" refers to the correlation between the two measurements and was assumed to be 0.5. "n [pairs]" refers to the number of paired comparisons. If multiple comparisons were present in a study, n [pairs] = (n [total] / # of comparisons).

Supplementary Figure 2. Summary of evidence search and selection process for the effect of oat β-glucan on postprandial glucose and insulin responses.



iAUC = incremental area under the curve; iPeak = incremental peak rise.

Supplementary Table 3. Study Characteristics

Study, Year [reference]	Participants	Health Status	Age, years	BMI, kg/m²	Intervention				Comparator		Duration, mins	Setting (OP/IP)	Funding	Outcome(s)
					Dose, g*	avCHO, g†	MW, g/mol‡	Description	avCHO, g†	Description				
Amiruddin et al. 2019 [73]	10 (0M, 10F)	Healthy	22.2±2.0	20.6±0.8	4	50	-	Chocolate-flavoured drink + OBG	50	Control drink	120	Malaysia (OP)	Agency	Glucose iAUC
					4	50	-	Chocolate-flavoured drink + whey protein (5g) + OBG	50	Chocolate-flavoured drink + whey protein (5g)				
Beck et al. 2009 [44]	14 (7M, 7F)	OW	38.7	29.6	2.16	43.2	1,681,000	Cereal with low-dose OBG sourced from oat bran (Oatwell LBG)	43.6	Corn-based control cereal	240	Australia (OP)	Industry	Insulin iAUC§
					3.82	42.9	1,378,000	Cereal with mid-dose OBG sourced from oat bran (Oatwell MBG)						
					5.45	42.6	1,213,000	Cereal with high-dose OBG sourced from oat bran (Oatwell HBG))						
					5.65	43.3	1,222,000	Cereal with high-dose OBG source from OBG concentrate (HBGX)						
Behall et al. 2006 [45]	20 (0M, 20F)	Mixed (Healthy & OW)	43.4	26.2	0.3	72	-	Muffin (Low-dose OBG, low-dose RS)	72	Glucose solution	240	USA (OP)	-	Glucose iAUC, Insulin iAUC
					0.3	72	-	Muffin (Low-dose OBG, med-dose RS)						
					0.3	72	-	Muffin (Low-dose OBG, high-dose RS)						
					0.9	72	-	Muffin (Med-dose OBG, low-dose RS)						
					0.9	72	-	Muffin (Med-dose OBG, med-dose RS)						
					0.9	72	-	Muffin (Med-dose OBG, high-dose RS)						
					3.7	72	-	Muffin (High-dose OBG, low-dose RS)						
					3.7	72	-	Muffin (High-dose OBG, med-dose RS)						
					3.7	72	-	Muffin (High-dose OBG, high-dose RS)						
Binou et al. 2020 [74]	10 (5M, 5F)	Healthy	27.0±3.9	24.5±2.8	6	50	-	Wheat bread enriched with OBG	50	50g glucose in 250mL water	180	Greece (OP)	Industry	Glucose iAUC
Braaten et al. 1991 [46]	10 (4M, 6F)	Healthy	25.0±5.8	24.9±4.3	11.3	51.1	804,950ƒ	Gel-like pudding containing 50g glucose + 14.5g oat gum	50	50g glucose in 500mL water	180	Canada (OP)	Industry	Glucose iAUC, Glucose iPeak
Braaten et al. 1994 [47]	11 (7M, 4F)	Healthy	51.9±6.2	27.3±2.0	8.8	60.7	900,000¶	Oat gum + wheat farina	62.2	Wheat farina	180	Canada (OP)	Agency & Industry	Glucose iAUC, Insulin iAUC, Glucose iPeak
					8.8	56.6	-	Oat Bran						
	10 (7M, 3F)	T2D	58.4±5.5	27.7±3.0	8.8	60.7	900,000¶	Oat gum + wheat farina	62.2	Wheat farina	180			
					8.8	56.6	-	Oat Bran						
Brennan et al. 2012 [48]	12 (4M, 8F)	Healthy	Range: 18-40	Range: 22.5-28	0.21	25	-	15% oat bran substitution with wheat flour in ready-to-eat snack product	25	Ready-to-eat snack product without oat bran	120	UK (OP)	-	Glucose iAUC
Brummer et al. 2012 [49]	12 (3M, 9F)	Healthy	48.5±1.9	28±2.0	8.6	31	2,180,000	Oat bran cereal (3H)	31	White bread	120	Canada (OP)	Agency	Glucose iAUC, Glucose iPeak
					8.3	31	921,000	Oat bran cereal (4M)						
					8.7	31	627,000	Oat bran cereal (3M)						
					8.4	31	326,000	Oat bran cereal (4L)						
Galvao Candino et al. 2015 [50]	10 (5M, 5F)	Healthy	22.9±1.7	22.1±2.0	2.75	75	-	Oat Bran Shake (50g oat bran, 3.71g powdered skim milk, 15g cocoa powder, 41.8g maltodextrin, 12.4g soybean oil, 20 drops sweetener)	75	Control Shake (23.7g powdered skim milk, 15g cocoa powder, 58.5g maltodextrin, 15.4g soybean oil, 20 drops sweetener)	120	Brazil (OP)	-	Glucose iAUC
Grandfeldt et al. 2008 [51] – series 1	19 (6M, 13F)	Healthy	37.5±15.2	22.4±0.6	3.0	50	-	Test meal (muesli with flakes made from oat bran (OatWell) + yogurt + sandwich)	48.5	Reference meal (yogurt + sandwich)	120	Sweden (OP)	Industry	Glucose iAUC, Insulin iAUC
Grandfeldt et al. 2008 [51] – series 2	13 (5F, 8M)	Healthy	37.5±3.6	22.4±0.6	4.0	50	-	Test meal (muesli with flakes made from oat bran (OatWell) + yogurt + sandwich)	50	Reference meal (yogurt + sandwich)				
Hartvigsen et al. 2014 [52]	15 (7M, 8F)	MetS	62.8±4.2	31.1±3.2	4.2	50	1,978,000	Wheat bread + concentrated OBG (PromOat)	50	Wheat Bread	120	Denmark (OP)	Agency	Glucose iAUC, Insulin iAUC
Hlebowicz et al. 2008 [53]	12 (8M, 4F)	Healthy	27±5	22±3	4.0	32.7	-	Muesli with flakes made from oat bran (OatWell)	38.7	Muesli containing cornflakes	60	Sweden (OP)	Industry	Glucose iAUC
Holm et al. 1992 -AJCN [54]	10 (3M, 7F)	Healthy	Range: M, 34-44; F, 26-49	Range: 18.5-23.5; 17.5-23.0	8.6	50	-	Oat bran bread (HSFB-ob)	50	White wheat bread (WWB-tl)	180	Sweden (OP)	Industry	Glucose iAUC, Insulin iAUC
Holm et al. 1992 -EJCN [55]	10 (9M, 1F)	Healthy	Range: 23-45	Range: 18-23.1	5.2	54.2	-	Oat bran pasta	54.2	Durum pasta	180	Switzerland (OP)	Agency	Glucose iAUC, Insulin iAUC, Glucose iPeak, Insulin iPeak

Jenkins et al. 2002 [56]	16 (10M, 6F)	T2D	61±7.2	29±6.4	7.3	50	-	OBG-enriched breakfast cereal	50	White bread	180	Canada (OP)	Industry	Glucose iAUC
					6.2	50	-	OBG-enriched snack bar						
					3.7	50	-	Oat bran breakfast cereal						
Juntunen et al. 2002 [57]	20 (10M,10F)	Healthy	28.5±5.6	22.9±2.9	5.4	50	250,000	OBG-enriched rye bread	50	White wheat bread	180	Finland (OP)	Agency & Industry	Glucose iPeak, Insulin iPeak
Kwong et al. 2013 – Food & Function [58]	15 (7M, 8F)	Healthy	37.2±11.2	26.6±4.3	4.0	50	145,000	4g Low MW OBG + 50g dextrose Drink (LD)	50	50g dextrose drink without OBG (ND)	120	Canada (OP)	Agency	Glucose iAUC, Glucose iPeak
					4.0	50	580,000	4g High MW OBG + 50g dextrose Drink (HD)						
					4.0	50	145,000	4g Low MW OBG + 50g dextrose Gel (4LG)						
					4.0	50	362,500	2g High MW OBG + 2g Low MW OBG + 50g dextrose Gel (2H2LG)						
					4.0	50	471,250	3g High MW OBG + 1g Low MW OBG + 50g dextrose Gel (3H1LG)						
Kwong et al. 2013 - BJN [59]	15 (7M, 8F)	Healthy	37.2±11.2	26.6±4.3	4.0	50	145,000	250mL 50g glucose solution with 4g Low MW OBG (250L)	50	250mL 50g glucose solution (250N)	120	Canada (OP)	Agency	Glucose iAUC, Glucose iPeak
					4.0	50	580,000	250mL 50g glucose solution with 4g High MW OBG (250H)						
					4.0	50	145,000	600mL 50g glucose solution with 4g Low MW OBG (600L)	50	600mL 50g glucose solution (600N)				
					4.0	50	580,000	600mL 50g glucose solution with 4g High MW OBG (600H)						
Lad-Pidhainy et al. 2007 [60]	11 (4M, 7F)	Healthy	34.6±10.4	24.7±4.8	7.6	50	2,800,000	Oat bran muffin with 8g OBG (8-g Fresh)	50	Whole Wheat Muffin (Control)	120	Canada (OP)	-	Glucose iAUC, Glucose iPeak
					7.6	50	2,000,000	Oat bran muffin with 8g OBG + 2 freeze thaw temperature cycling (8-g 2FT)						
					7.6	50	1,800,000	Oat bran muffin with 8g OBG + 4 freeze thaw temperature cycling (8-g 4FT)						
					10.8	50	2,700,000	Oat bran muffin with 12g OBG (12-g Fresh)						
					10.8	50	2,400,000	Oat bran muffin with 12g OBG + 2 freeze thaw temperature cycling (12-g 2FT)						
					10.8	50	2,000,000	Oat bran muffin with 12g OBG + 4 freeze thaw temperature cycling (12-g 4FT)						
Lindstrom et al. 2015 [61]	18 (8M, 10F)	OW	48.1±15.6	27.9±2.4	3.0	50	-	Liquid oat bran mixed with cow's milk	50	White wheat bread	180	Sweden (OP)	Agency	Glucose iAUC, Insulin iAUC, Glucose iPeak
Panahi et al. 2007 [62]	11 (5M, 6F)	Healthy	34±5	23.0±0.8	6	75	-	75g-OGTT + 11.05g Oat-A (concentrate obtained by an alcohol-based enzymatic process)	75	75g-OGTT + 8g fructose oligosaccharide + 3g wheat bran (control)	120	Canada (OP)	Agency	Glucose iAUC
					6	75	-	75g-OGTT + 10.17g Oat-B (concentrate obtained by an aqueous extraction process)	75					
Panahi et al. 2014 [63]	12 (7M, 5F)	Healthy	26.1±6.9	24.8±3.1	1.5	50	-	OBG-enriched snack bar from oat concentrate	50	Snack bar without OBG	120	Canada (OP)	Agency & Industry	Glucose iAUC
					3.0	50	-	OBG-enriched snack bar from oat concentrate						
					6.0	50	-	OBG-enriched snack bar from oat concentrate						
Paquin et al. 2013 [64]	14 (14M, 0F)	Healthy	32±9	23.9±4	1.1	35	-	Fruit juice enriched with OBG	35	Fruit Juice without OBG	120	Canada (OP)	Agency & Industry	Glucose iAUC, Insulin iAUC, Glucose iPeak, Insulin iPeak
Regand et al. 2009 [65]	12 (6M, 6F)	Healthy	42.3±14.6	28.8±5.5	4.0	64	197,000	Oat crisp bread	65	Wheat crisp bread	120	Canada (OP)	Agency	Glucose iAUC, Glucose iPeak
					4.0	43	1,942,000	Oat porridge	46	Whole wheat muffin				
					4.0	44	1,911,000	Oat granola						
					4.0	42	465,000	Oat pasta	44	Whole wheat pasta				
Regand et al. 2011 [66]	12 (6M, 6F)	Healthy	27.3±5.5	25.6±5.0	6.2	38	57,000	Oat Granola (Low MW OBG, 40g avCHO)	40	Wheat granola (40g avCHO)	120	Canada (OP)	Agency	Glucose iAUC, Glucose iPeak
					6.2	38	435,000	Oat Granola (Med MW OBG, 40g avCHO)						
					6.2	38	2,133,000	Oat Granola (High MW OBG, 40g avCHO)						
					6.3	60	82,000	Oat Granola (Low MW OBG, 60g avCHO)	58	Wheat granola (60g avCHO)				
					6.3	60	325,000	Oat Granola (Med MW OBG, 60g avCHO)						
					6.3	60	1,996,000	Oat Granola (High MW OBG, 60g avCHO)						

Rieder et al. 2019 [67]	14	Healthy	44.8±13.8	24.3±1.7	3.8	26.2	282,000	Degraded oat bran concentrate bread (Degraded OBCB)	26	White wheat bread	120	UK (OP)	Agency	Glucose iAUC, Glucose iPeak
					3.8	26.3	592,000	Optimal oat bran concentrate bread (Optimal OBCB)						
					1.7	26.4	421,000	Low oat bran concentrate bread (Low OBCB)						
Tapola et al. 2005 [68]	12 (7M, 5F)	T2D	66±7	28.9±3.5	9.4	12.5	-	Oat bran flour (61.6g) mixed with cold water	12.5	12.5g glucose drink	120	Finland (OP)	-	Glucose iAUC
					3.0	12.5	-	Cold water poured onto oat bran crisp (29.1g)						
					4.6	31.1	-	25g glucose drink with oat bran flour (30g)	25	25g glucose drink				
Tappy et al. 1996 [69]	8 (7M, 1F)	T2D	56.1±10.4	29.6±5.3	4.0	35	-	OBG-enriched breakfast cereal	35	Standard continental breakfast	240	Switzerland (OP)	-	Glucose iAUC, Glucose iPeak
					6.0	35	-	OBG-enriched breakfast cereal						
					8.4	35	-	OBG-enriched breakfast cereal						
Tosh et al. 2008 [7]	10 (6M, 4F)	Healthy	37.6±18.0	23.8±4.4	4.4	47.9	130,000	Oat bran muffins prepared with enzyme to get low MW OBG (4g L)	51.4	Whole wheat muffin	120	Canada (OP)	Agency	Glucose iAUC, Glucose iPeak
					4.4	47.9	380,000	Oat bran muffins prepared with enzyme to get medium MW OBG (4g M)						
					4.4	47.9	590,000	Oat bran muffins prepared with enzyme to get high MW OBG (4g H)						
					4.4	47.9	2,190,000	Oat bran muffins prepared without enzyme (4g N)						
					8.2	45	220,000	Oat bran muffins prepared with enzyme to get low MW OBG (8g L)						
					8.2	45	410,000	Oat bran muffins prepared with enzyme to get medium MW OBG (8g M)						
					8.2	45	760,000	Oat bran muffins prepared with enzyme to get high MW OBG (8g H)						
					8.2	45	2,230,000	Oat bran muffins prepared without enzyme (8g N)						
Ulmius et al. 2011 [70]	15 (8M, 7F)	Healthy	Range: 20-28	22.8±2.1	4.5	75	-	Oat bran (82g), black currant beverage with pulp (250g), white bread (15.5g)	75	Black currant beverage with pulp (250g), white bread (67.7g), dextrose (10g), rapeseed oil (5.9g)	180	Sweden (OP)	Agency	Glucose iAUC, Insulin iAUC, Glucose iPeak, Insulin iPeak
Wang et al. 2017 [75]	10 (5M, 5F)	Healthy	25.2±2.0	22.4±1.2	1.25	25	-	OBG-enriched steamed bread	25	Steamed bread without OBG (Control)	120	China (OP)	Agency	Glucose iAUC
Wolever et al. 2018 [6]	40 (22M, 18F)	Healthy	31.5±11.0	25.1±3.0	1.4	27.7	-	Instant oatmeal + 0.72g oat bran	27.6	Instant oatmeal without oat bran	120	Canada (OP)	Industry	Glucose iAUC, Glucose iPeak
					1.6	27.7	-	Instant oatmeal + 1.43g oat bran						
					2.0	27.9	-	Instant oatmeal + 2.86g oat bran						
					2.8	28.1	-	Instant oatmeal + 5.72g oat bran						
Wolever et al. 2020 [76]	28 (16M, 12F)	Healthy	33.1±10.6	24.8±2.3	2	51.2	1,999,000	Instant oatmeal (27g) + oat bran (3g) + standard breakfast (25-27g white bread, 5-7g butter, 11-21g jam, 240mL 2% milk)	51.3	Cream of Rice	180	Canada (OP)	Industry	Glucose iAUC, Insulin iAUC, Glucose iPeak, Insulin iPeak
					4	51.2	2,060,000	Instant oatmeal (27g) + oat bran (10.1g) + standard breakfast (25-27g white bread, 5-7g butter, 11-21g jam, 240mL 2% milk)						
					4	51.2	<10,000	Instant oatmeal (27g) + oat bran (10.1g) treated with β-glucanase + standard breakfast (25-27g white bread, 5-7g butter, 11-21g jam, 240mL 2% milk)						
Wood et al. 1990 [71]	9 (4M, 5F)	Healthy	23.6±3.9	24.5±4.2	11.7	50	900,000¶	Glucose drink (50g) + 14.5g oat gum	50	Glucose drink (50g) without oat gum	180	Canada (OP)	Industry	Glucose iAUC
	10 (7M, 3F)	Healthy	52±7.3	27.3±11.7	8.9	60	900,000¶	Cream of wheat (48g) + 11g oat gum	60	Cream of wheat control (68g) without oat gum				
Wood et al. 1994 [72]	9 (4M, 5F)	Healthy	31.4±4.9	24.8±6.2	1.5	50	804, 950ƒ	50g glucose drink + 1.8g oat gum	50	50g glucose drink without oat gum	180	Canada (OP)	Industry	Glucose iAUC, Insulin iAUC, Glucose iPeak, Insulin iPeak
					2.9	50	804, 950ƒ	50g glucose drink + 3.6g oat gum						
					5.8	50	804, 950ƒ	50g glucose drink + 7.2g oat gum						
	11 (6M, 5F)	Healthy	34.3±10.4	24.3±2.5	6.4	50	250,800ƒ	50g glucose drink + 7.2g oat gum acid-hydrolyzed for 15mins (OG15)	50	50g glucose drink without oat gum				
					6.4	50	101,850ƒ	50g glucose drink + 7.2g oat gum acid-hydrolyzed for 60mins (OG60)						
	8 (6M, 2F)	Healthy	39.8±14.3	26.4±1.9	5.8	50	-	36.2g Instagum (containing 7.2g oat gum and 29g DE 10 maltodextrin), 250ml degassed diet soft drink (7-Up), 250ml degassed soda water containing 21g glucose	53	Control drink (21g glucose + 29g DE 10 maltodextrin)				

Footnotes on next page

Data represent mean±SD, unless stated otherwise. "-" represents lack of reporting of data. BMI, body mass index; avCHO, available carbohydrate; MW, molecular weight; OP, outpatient; M, male; F, female; OW, overweight; OBG, oat beta-glucan; netAUC, net area under the curve; iAUC, incremental area under the curve; RS, resistant starch; iPeak, incremental peak; T2D, type 2 diabetes.

* For studies where oat bran was provided and dose was specified (Galvao Candino et al. 2015 [50], Ulmius et al. 2011 [70]), OBG dose was estimated to be 5.5% of the oat bran dose. For Holm et al. 1992 – AJCN [54], as this calculation would yield a larger dose than the soluble dietary fibre reported, OBG dose was calculated by taking the difference of the soluble fibre in OSFB-ob and WWB-mg.

† Behall et al. 2006 [39] – 1g avCHO/kg body weight, average given

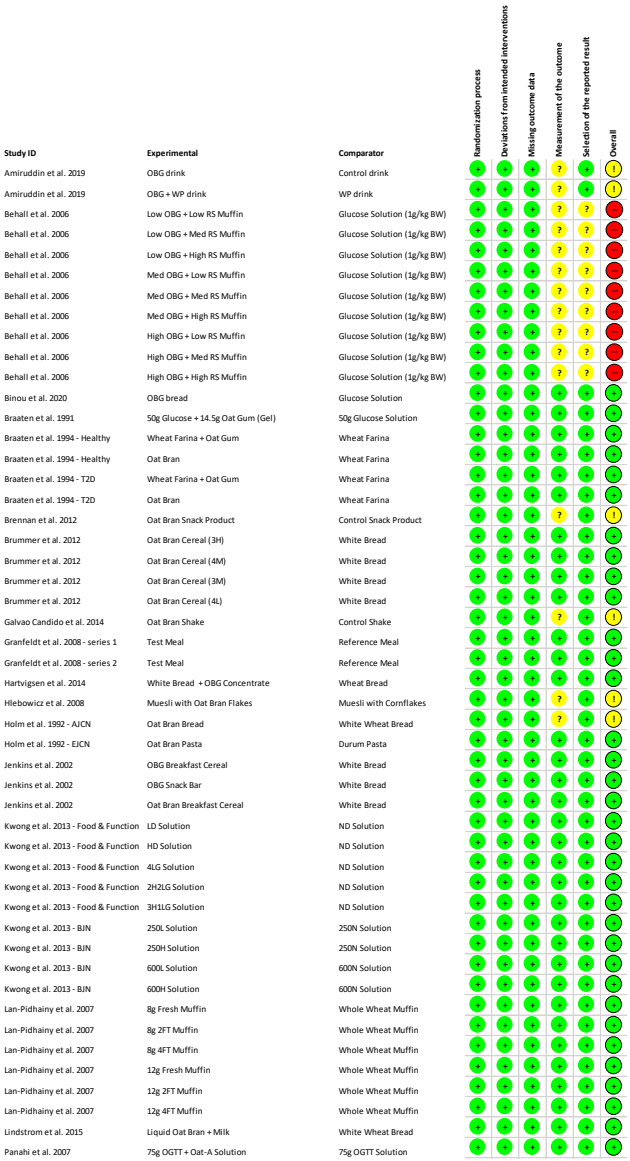
‡ Individual study MW categorizations may differ from categories that were used in this systematic review and meta-analysis. In this analysis, low MW OBG were considered to be <300 kg/mol, medium MW were 300 to ≤1,000 kg/mol, and high MW were >1,000 kg/mol.

§ Beck et al. 2009 [38] – netAUC insulin (0-2h) data were extracted and analyzed as iAUC data because insulin levels do not dip below baseline levels at 120mins (Figure 2a).

ƒ Data retrieved from Table 1 (Wood, P., Beer, M., & Butler, G. (2000). Evaluation of role of concentration and molecular weight of oat β-glucan in determining effect of viscosity on plasma glucose and insulin following an oral glucose load. British Journal of Nutrition, 84(1), 19-23. doi:10.1017/S0007114500001185)

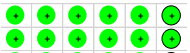
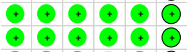
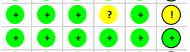
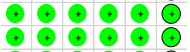
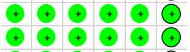
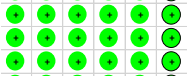
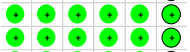
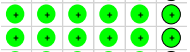
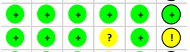
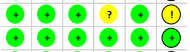
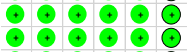
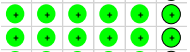
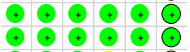
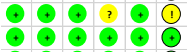
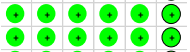
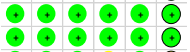
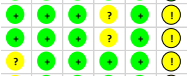
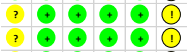
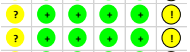
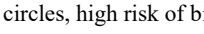
¶ Data retrieved from Wood, P.J. (2010), REVIEW: Oat and Rye β-Glucan: Properties and Function. Cereal Chemistry, 87: 315-330. doi:10.1094/CCHEM-87-4-0315.

Supplementary Table 4. RoB of trial comparisons on the effect of OBG on glucose iAUC. Trial comparisons were assessed as having some concerns in the measurement of the outcome if either the dose of OBG was not specified or the sum of the other study methodology criteria was <7



Study ID	Experimental	Comparator	Randomization process	Deviations from intended interventions	Missing outcome data	Measurement of the outcome	Selection of the reported result	Overall
Amiruddin et al. 2019	OBG drink	Control drink	+	+	+	?	+	!
Amiruddin et al. 2019	OBG + WP drink	WP drink	+	+	+	?	+	!
Behall et al. 2006	Low OBG + Low RS Muffin	Glucose Solution (1g/kg BW)	+	+	+	?	?	-
Behall et al. 2006	Low OBG + Med RS Muffin	Glucose Solution (1g/kg BW)	+	+	+	?	?	-
Behall et al. 2006	Low OBG + High RS Muffin	Glucose Solution (1g/kg BW)	+	+	+	?	?	-
Behall et al. 2006	Med OBG + Low RS Muffin	Glucose Solution (1g/kg BW)	+	+	+	?	?	-
Behall et al. 2006	Med OBG + Med RS Muffin	Glucose Solution (1g/kg BW)	+	+	+	?	?	-
Behall et al. 2006	Med OBG + High RS Muffin	Glucose Solution (1g/kg BW)	+	+	+	?	?	-
Behall et al. 2006	High OBG + Low RS Muffin	Glucose Solution (1g/kg BW)	+	+	+	?	?	-
Behall et al. 2006	High OBG + Med RS Muffin	Glucose Solution (1g/kg BW)	+	+	+	?	?	-
Behall et al. 2006	High OBG + High RS Muffin	Glucose Solution (1g/kg BW)	+	+	+	?	?	-
Binou et al. 2020	OBG bread	Glucose Solution	+	+	+	+	+	+
Braaten et al. 1991	50g Glucose + 14.5g Oat Gum (Gel)	50g Glucose Solution	+	+	+	+	+	+
Braaten et al. 1994 - Healthy	Wheat Farina + Oat Gum	Wheat Farina	+	+	+	+	+	+
Braaten et al. 1994 - Healthy	Oat Bran	Wheat Farina	+	+	+	+	+	+
Braaten et al. 1994 - T2D	Wheat Farina + Oat Gum	Wheat Farina	+	+	+	+	+	+
Braaten et al. 1994 - T2D	Oat Bran	Wheat Farina	+	+	+	+	+	+
Brennan et al. 2012	Oat Bran Snack Product	Control Snack Product	+	+	+	?	+	!
Brummer et al. 2012	Oat Bran Cereal (3H)	White Bread	+	+	+	+	+	+
Brummer et al. 2012	Oat Bran Cereal (4M)	White Bread	+	+	+	+	+	+
Brummer et al. 2012	Oat Bran Cereal (3M)	White Bread	+	+	+	+	+	+
Brummer et al. 2012	Oat Bran Cereal (4L)	White Bread	+	+	+	+	+	+
Galvao Candido et al. 2014	Oat Bran Shake	Control Shake	+	+	+	?	+	!
Granfeldt et al. 2008 - series 1	Test Meal	Reference Meal	+	+	+	+	+	+
Granfeldt et al. 2008 - series 2	Test Meal	Reference Meal	+	+	+	+	+	+
Hartvigsen et al. 2014	White Bread + OBG Concentrate	Wheat Bread	+	+	+	+	+	+
Hlebowicz et al. 2008	Muesli with Oat Bran Flakes	Muesli with Cornflakes	+	+	+	?	+	!
Holm et al. 1992 - AJCN	Oat Bran Bread	White Wheat Bread	+	+	+	?	+	!
Holm et al. 1992 - EJCN	Oat Bran Pasta	Durum Pasta	+	+	+	+	+	+
Jenkins et al. 2002	OBG Breakfast Cereal	White Bread	+	+	+	+	+	+
Jenkins et al. 2002	OBG Snack Bar	White Bread	+	+	+	+	+	+
Jenkins et al. 2002	Oat Bran Breakfast Cereal	White Bread	+	+	+	+	+	+
Kwong et al. 2013 - Food & Function	LD Solution	ND Solution	+	+	+	+	+	+
Kwong et al. 2013 - Food & Function	HD Solution	ND Solution	+	+	+	+	+	+
Kwong et al. 2013 - Food & Function	4LG Solution	ND Solution	+	+	+	+	+	+
Kwong et al. 2013 - Food & Function	2H2LG Solution	ND Solution	+	+	+	+	+	+
Kwong et al. 2013 - Food & Function	3H1LG Solution	ND Solution	+	+	+	+	+	+
Kwong et al. 2013 - BJN	250L Solution	250N Solution	+	+	+	+	+	+
Kwong et al. 2013 - BJN	250H Solution	250N Solution	+	+	+	+	+	+
Kwong et al. 2013 - BJN	600L Solution	600N Solution	+	+	+	+	+	+
Kwong et al. 2013 - BJN	600H Solution	600N Solution	+	+	+	+	+	+
Lan-Pidhainy et al. 2007	8g Fresh Muffin	Whole Wheat Muffin	+	+	+	+	+	+
Lan-Pidhainy et al. 2007	8g 2FT Muffin	Whole Wheat Muffin	+	+	+	+	+	+
Lan-Pidhainy et al. 2007	8g 4FT Muffin	Whole Wheat Muffin	+	+	+	+	+	+
Lan-Pidhainy et al. 2007	12g Fresh Muffin	Whole Wheat Muffin	+	+	+	+	+	+
Lan-Pidhainy et al. 2007	12g 2FT Muffin	Whole Wheat Muffin	+	+	+	+	+	+
Lan-Pidhainy et al. 2007	12g 4FT Muffin	Whole Wheat Muffin	+	+	+	+	+	+
Lindstrom et al. 2015	Liquid Oat Bran + Milk	White Wheat Bread	+	+	+	+	+	+
Panahi et al. 2007	75g OGTT + Oat-A Solution	75g OGTT Solution	+	+	+	+	+	+

Supplementary Table 4 *(continued)*

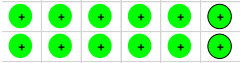
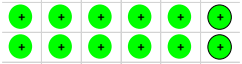
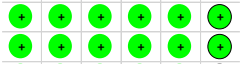
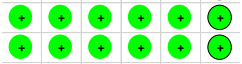
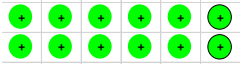
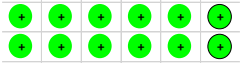
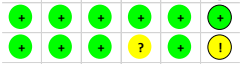
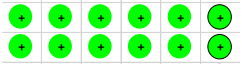
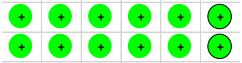
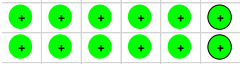
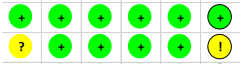
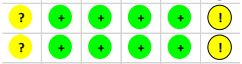
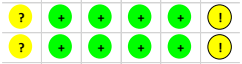
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Panahi et al. 2014	3g OBG Snack Bar	Control Snack Bar	
Panahi et al. 2014	6g OBG Snack Bar	Control Snack Bar	
Paquin et al. 2013	Fruit Juice + OBG	Fruit Juice	
Regand et al. 2009	Oat Crisp Bread	Wheat Crisp Bread	
Regand et al. 2009	Oat Porridge	Whole Wheat Muffin	
Regand et al. 2009	Oat Granola	Whole Wheat Muffin	
Regand et al. 2009	Oat Pasta	Whole Wheat Pasta	
Regand et al. 2011	Oat Granola (low MW OBG, 40g avCHO)	Wheat Granola (40g avCHO)	
Regand et al. 2011	Oat Granola (med MW OBG, 40g avCHO)	Wheat Granola (40g avCHO)	
Regand et al. 2011	Oat Granola (high MW OBG, 40g avCHO)	Wheat Granola (40g avCHO)	
Regand et al. 2011	Oat Granola (low MW OBG, 60g avCHO)	Wheat Granola (60g avCHO)	
Regand et al. 2011	Oat Granola (med MW OBG, 60g avCHO)	Wheat Granola (60g avCHO)	
Regand et al. 2011	Oat Granola (high MW OBG, 60g avCHO)	Wheat Granola (60g avCHO)	
Rieder et al. 2019	Degraded OBC Bread	White Wheat Bread	
Rieder et al. 2019	Optimal OBC Bread	White Wheat Bread	
Rieder et al. 2019	Low OBC Bread	White Wheat Bread	
Tapola et al. 2005	Oat Bran Flour Solution	12.5g Glucose Solution	
Tapola et al. 2005	Water + Oat Bran Crisp	12.5g Glucose Solution	
Tapola et al. 2005	Oat Bran Flour + 25g Glucose Solution	25g Glucose Solution	
Tappy et al. 1996	6g OBG Breakfast Cereal	Standard Continental Breakfast	
Tappy et al. 1996	8.4g OBG Breakfast Cereal	Standard Continental Breakfast	
Tappy et al. 1996	4g OBG Breakfast Cereal	Standard Continental Breakfast	
Tosh et al. 2008	Oat Bran Muffin (4g L)	Whole Wheat Muffin	
Tosh et al. 2008	Oat Bran Muffin (4g M)	Whole Wheat Muffin	
Tosh et al. 2008	Oat Bran Muffin (4g H)	Whole Wheat Muffin	
Tosh et al. 2008	Oat Bran Muffin (4g N)	Whole Wheat Muffin	
Tosh et al. 2008	Oat Bran Muffin (8g L)	Whole Wheat Muffin	
Tosh et al. 2008	Oat Bran Muffin (8g M)	Whole Wheat Muffin	
Tosh et al. 2008	Oat Bran Muffin (8g H)	Whole Wheat Muffin	
Tosh et al. 2008	Oat Bran Muffin (8g N)	Whole Wheat Muffin	
Ulmius et al. 2011	Oat Bran Meal	Control Meal	
Wang et al. 2020	OBG steamed bread	Steamed bread	
Wolever et al. 2018	Oatmeal + 0.72g Oat Bran	Oatmeal	
Wolever et al. 2018	Oatmeal + 1.43g Oat Bran	Oatmeal	
Wolever et al. 2018	Oatmeal + 2.86g Oat Bran	Oatmeal	
Wolever et al. 2018	Oatmeal + 5.72g Oat Bran	Oatmeal	
Wolever et al. 2020 - AJCN	Oatmeal + 3g Oat Bran	Cream of Rice	
Wolever et al. 2020 - AJCN	Oatmeal + 10.1g Oat Bran	Cream of Rice	
Wolever et al. 2020 - AJCN	Oatmeal + 10.1g loMW Oat Bran	Cream of Rice	
Wood et al. 1990 - exp 1	50g Glucose Solution + Oat Gum	50g Glucose Solution	
Wood et al. 1990 - exp 2	Cream of Wheat + Oat Gum	Cream of Wheat	
Wood et al. 1994 - exp 1	50g Glucose Solution + 1.8g Oat Gum	50g Glucose Solution	
Wood et al. 1994 - exp 1	50g Glucose Solution + 3.6g Oat Gum	50g Glucose Solution	
Wood et al. 1994 - exp 1	50g Glucose Solution + 7.2g Oat Gum	50g Glucose Solution	
Wood et al. 1994 - exp 2	50g Glucose Drink + Hydrolyzed Oat Gum (OG15)	50g Glucose Solution	
Wood et al. 1994 - exp 2	50g Glucose Drink + Hydrolyzed Oat Gum (OG60)	50g Glucose Solution	
Wood et al. 1994 - exp 3	Instagum Drink	Control Drink	

Green circles, low risk of bias; yellow circles, some concerns; red circles, high risk of bias

Supplementary Table 5. RoB of trial comparisons on the effect of OBG on glucose iPeak. Trial comparisons were assessed as having some concerns in the measurement of the outcome if either the dose of OBG was not specified or the sum of the other study methodology criteria was <6

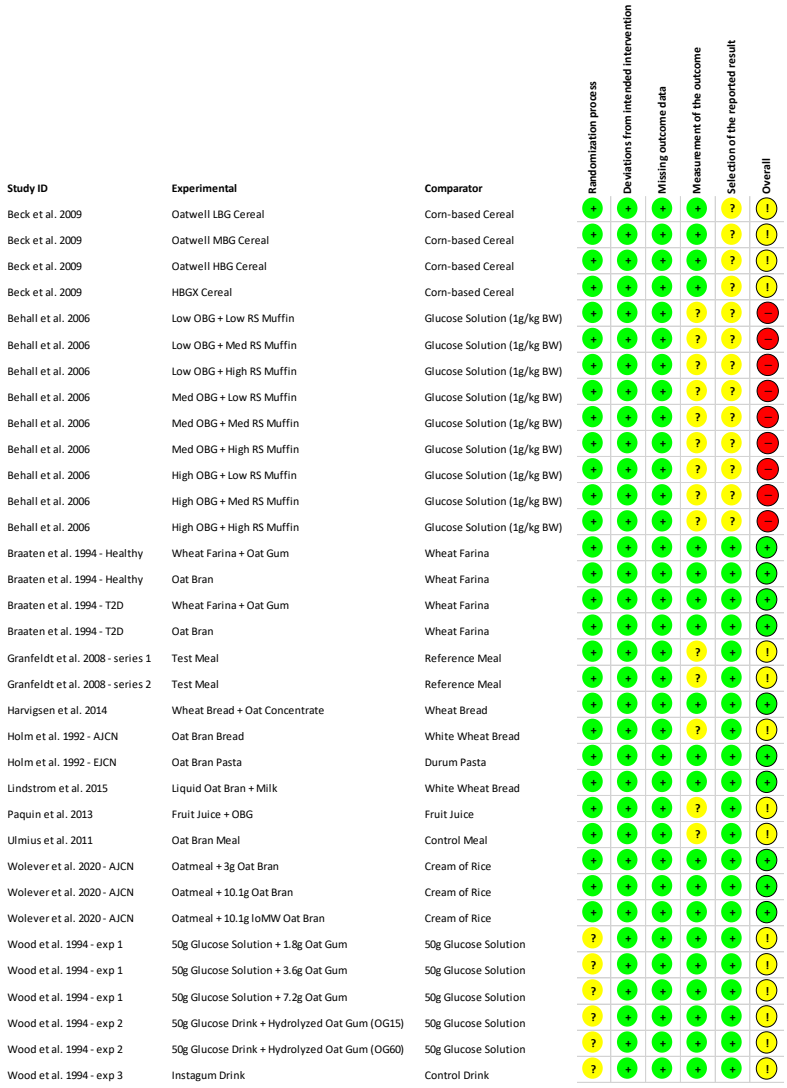
Study ID	Experimental	Comparator	Randomization process	Deviations from intended interventions	Missing outcome data	Measurement of the outcome	Selection of the reported result	Overall
Braaten et al. 1991	50g Glucose + 14.5g Oat Gum (Gel)	50g Glucose Solution	+	+	+	+	+	+
Braaten et al. 1994 - Healthy	Wheat Farina + Oat Gum	Wheat Farina	+	+	+	+	+	+
Braaten et al. 1994 - Healthy	Oat Bran	Wheat Farina	+	+	+	+	+	+
Braaten et al. 1994 - T2D	Wheat Farina + Oat Gum	Wheat Farina	+	+	+	+	+	+
Braaten et al. 1994 - T2D	Oat Bran	Wheat Farina	+	+	+	+	+	+
Brummer et al. 2012	Oat Bran Cereal (3H)	White Bread	+	+	+	+	+	+
Brummer et al. 2012	Oat Bran Cereal (4M)	White Bread	+	+	+	+	+	+
Brummer et al. 2012	Oat Bran Cereal (3M)	White Bread	+	+	+	+	+	+
Brummer et al. 2012	Oat Bran Cereal (4L)	White Bread	+	+	+	+	+	+
Holm et al. 1992 - EJCN	Oat Bran Pasta	Durum Pasta	+	+	+	+	+	+
Juntunen et al. 2002	OBG Rye Bread	White Wheat Bread	+	+	+	+	?	!
Kwong et al. 2013 - Food & Function	LD Solution	ND Solution	+	+	+	+	+	+
Kwong et al. 2013 - Food & Function	HD Solution	ND Solution	+	+	+	+	+	+
Kwong et al. 2013 - Food & Function	4LG Solution	ND Solution	+	+	+	+	+	+
Kwong et al. 2013 - Food & Function	2H2LG Solution	ND Solution	+	+	+	+	+	+
Kwong et al. 2013 - Food & Function	3H1LG Solution	ND Solution	+	+	+	+	+	+
Kwong et al. 2013 - BJN	250L Solution	250N Solution	+	+	+	+	+	+
Kwong et al. 2013 - BJN	250H Solution	250N Solution	+	+	+	+	+	+
Kwong et al. 2013 - BJN	600L Solution	600N Solution	+	+	+	+	+	+
Kwong et al. 2013 - BJN	600H Solution	600N Solution	+	+	+	+	+	+
Lan-Pidhainy et al. 2007	8g Fresh Muffin	Whole Wheat Muffin	+	+	+	+	+	+
Lan-Pidhainy et al. 2007	8g 2FT Muffin	Whole Wheat Muffin	+	+	+	+	+	+
Lan-Pidhainy et al. 2007	8g 4FT Muffin	Whole Wheat Muffin	+	+	+	+	+	+
Lan-Pidhainy et al. 2007	12g Fresh Muffin	Whole Wheat Muffin	+	+	+	+	+	+
Lan-Pidhainy et al. 2007	12g 2FT Muffin	Whole Wheat Muffin	+	+	+	+	+	+
Lan-Pidhainy et al. 2007	12g 4FT Muffin	Whole Wheat Muffin	+	+	+	+	+	+
Lindstrom et al. 2015	Liquid Oat Bran + Milk	White Wheat Bread	+	+	+	+	+	+
Paquin et al. 2013	Fruit Juice + OBG	Fruit Juice	+	+	+	?	+	!
Regand et al. 2009	Oat Crisp Bread	Wheat Crisp Bread	+	+	+	+	+	+
Regand et al. 2009	Oat Porridge	Whole Wheat Muffin	+	+	+	+	+	+
Regand et al. 2009	Oat Granola	Whole Wheat Muffin	+	+	+	+	+	+
Regand et al. 2009	Oat Pasta	Whole Wheat Pasta	+	+	+	+	+	+
Regand et al. 2011	Oat Granola (low MW OBG, 40g avCHO)	Wheat Granola (40g avCHO)	+	+	+	+	+	+

Supplementary Table 5 *(continued)*

Regand et al. 2011	Oat Granola (med MW OBG, 40g avCHO)	Wheat Granola (40g avCHO)	
Regand et al. 2011	Oat Granola (high MW OBG, 40g avCHO)	Wheat Granola (40g avCHO)	
Regand et al. 2011	Oat Granola (low MW OBG, 60g avCHO)	Wheat Granola (60g avCHO)	
Regand et al. 2011	Oat Granola (med MW OBG, 60g avCHO)	Wheat Granola (60g avCHO)	
Regand et al. 2011	Oat Granola (high MW OBG, 60g avCHO)	Wheat Granola (60g avCHO)	
Rieder et al. 2019	Degraded OBC Bread	White Wheat Bread	
Rieder et al. 2019	Optimal OBC Bread	White Wheat Bread	
Rieder et al. 2019	Low OBC Bread	White Wheat Bread	
Tappy et al. 1996	6g OBG Breakfast Cereal	Standard Continental Breakfast	
Tappy et al. 1996	8.4g OBG Breakfast Cereal	Standard Continental Breakfast	
Tappy et al. 1996	4g OBG Breakfast Cereal	Standard Continental Breakfast	
Tosh et al. 2008	Oat Bran Muffin (4g L)	Whole Wheat Muffin	
Tosh et al. 2008	Oat Bran Muffin (4g M)	Whole Wheat Muffin	
Tosh et al. 2008	Oat Bran Muffin (4g H)	Whole Wheat Muffin	
Tosh et al. 2008	Oat Bran Muffin (4g N)	Whole Wheat Muffin	
Tosh et al. 2008	Oat Bran Muffin (8g L)	Whole Wheat Muffin	
Tosh et al. 2008	Oat Bran Muffin (8g M)	Whole Wheat Muffin	
Tosh et al. 2008	Oat Bran Muffin (8g H)	Whole Wheat Muffin	
Tosh et al. 2008	Oat Bran Muffin (8g N)	Whole Wheat Muffin	
Ulmius et al. 2011	Oat Bran Meal	Control Meal	
Wolever et al. 2018	Oatmeal + 0.72g Oat Bran	Oatmeal	
Wolever et al. 2018	Oatmeal + 1.43g Oat Bran	Oatmeal	
Wolever et al. 2018	Oatmeal + 2.86g Oat Bran	Oatmeal	
Wolever et al. 2018	Oatmeal + 5.72g Oat Bran	Oatmeal	
Wolever et al. 2020 - AJCN	Oatmeal + 3g Oat Bran	Cream of Rice	
Wolever et al. 2020 - AJCN	Oatmeal + 10.1g Oat Bran	Cream of Rice	
Wolever et al. 2020 - AJCN	Oatmeal + 10.1g loMW Oat Bran	Cream of Rice	
Wood et al. 1994 - exp 1	50g Glucose Solution + 1.8g Oat Gum	50g Glucose Solution	
Wood et al. 1994 - exp 1	50g Glucose Solution + 3.6g Oat Gum	50g Glucose Solution	
Wood et al. 1994 - exp 1	50g Glucose Solution + 7.2g Oat Gum	50g Glucose Solution	
Wood et al. 1994 - exp 2	50g Glucose Drink + Hydrolyzed Oat Gum (OG15)	50g Glucose Solution	
Wood et al. 1994 - exp 2	50g Glucose Drink + Hydrolyzed Oat Gum (OG60)	50g Glucose Solution	
Wood et al. 1994 - exp 3	Instagum Drink	Control Drink	

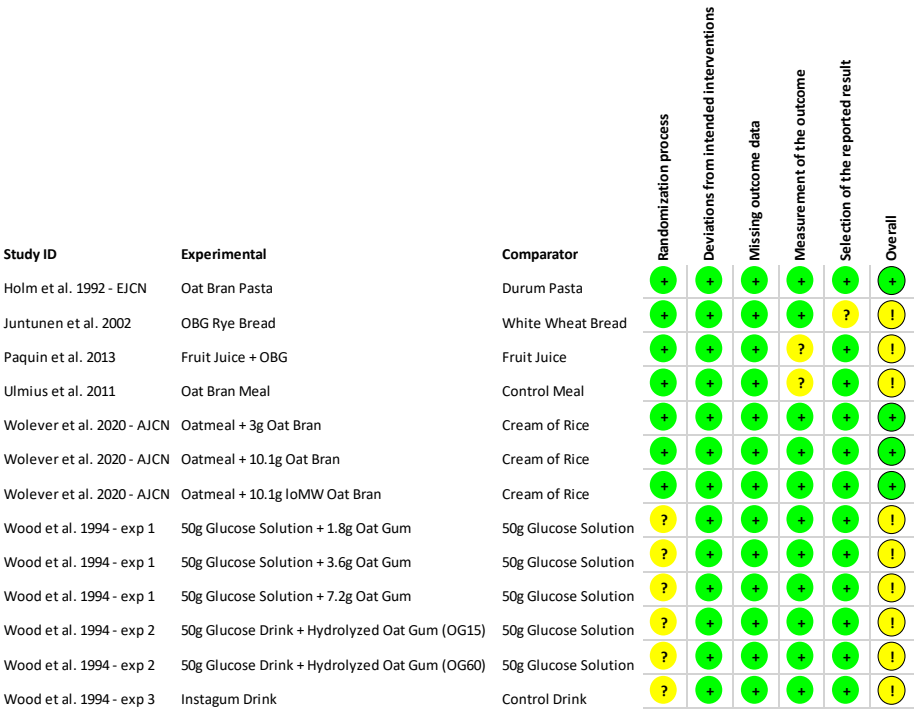
Green circles, low risk of bias; yellow circles, some concerns; red circles, high risk of bias

Supplementary Table 6. RoB of trial comparisons on the effect of OBG on insulin iAUC. Trial comparisons were assessed as having some concerns in the measurement of the outcome if either the dose of OBG was not specified or the sum of the other study methodology criteria was <7



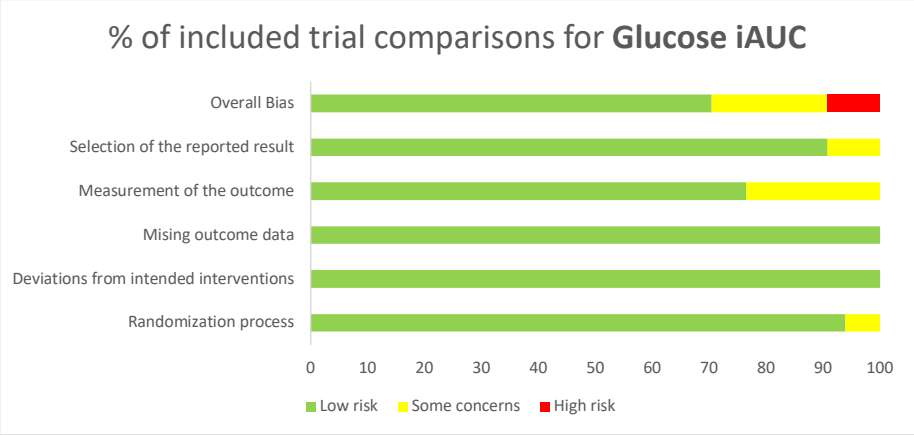
Green circles, low risk of bias; yellow circles, some concerns; red circles, high risk of bias

Supplementary Table 7. RoB of trial comparisons on the effect of OBG on insulin iPeak. Trial comparisons were assessed as having some concerns in the measurement of the outcome if either the dose of OBG was not specified or the sum of the other study methodology criteria was <6

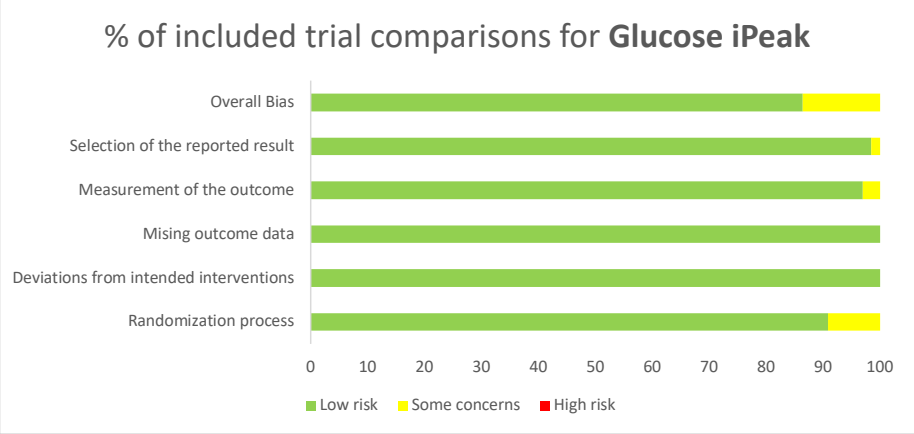


Green circles, low risk of bias; yellow circles, some concerns; red circles, high risk of bias

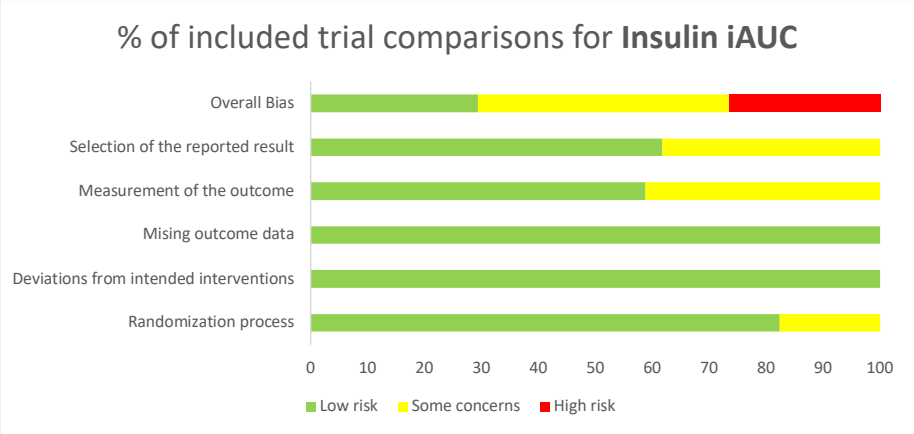
Supplementary Figure 3. RoB summary on the effect of OBG on glucose iAUC. .



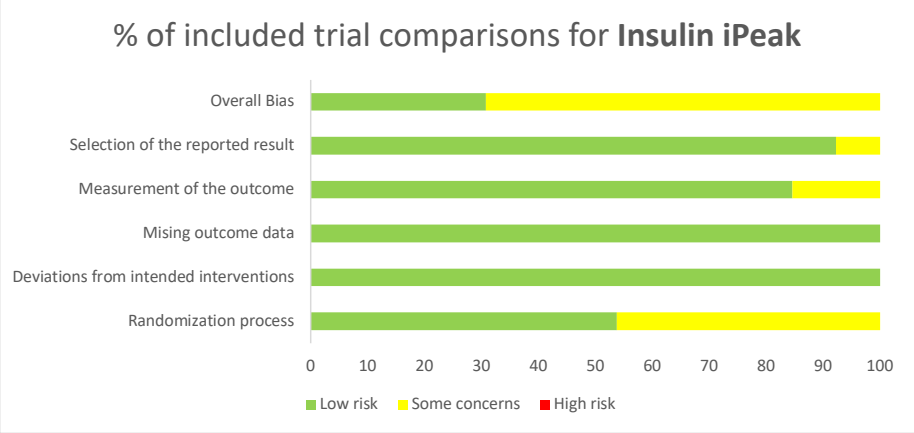
Supplementary Figure 4. RoB summary on the effect of OBG on glucose iPeak.



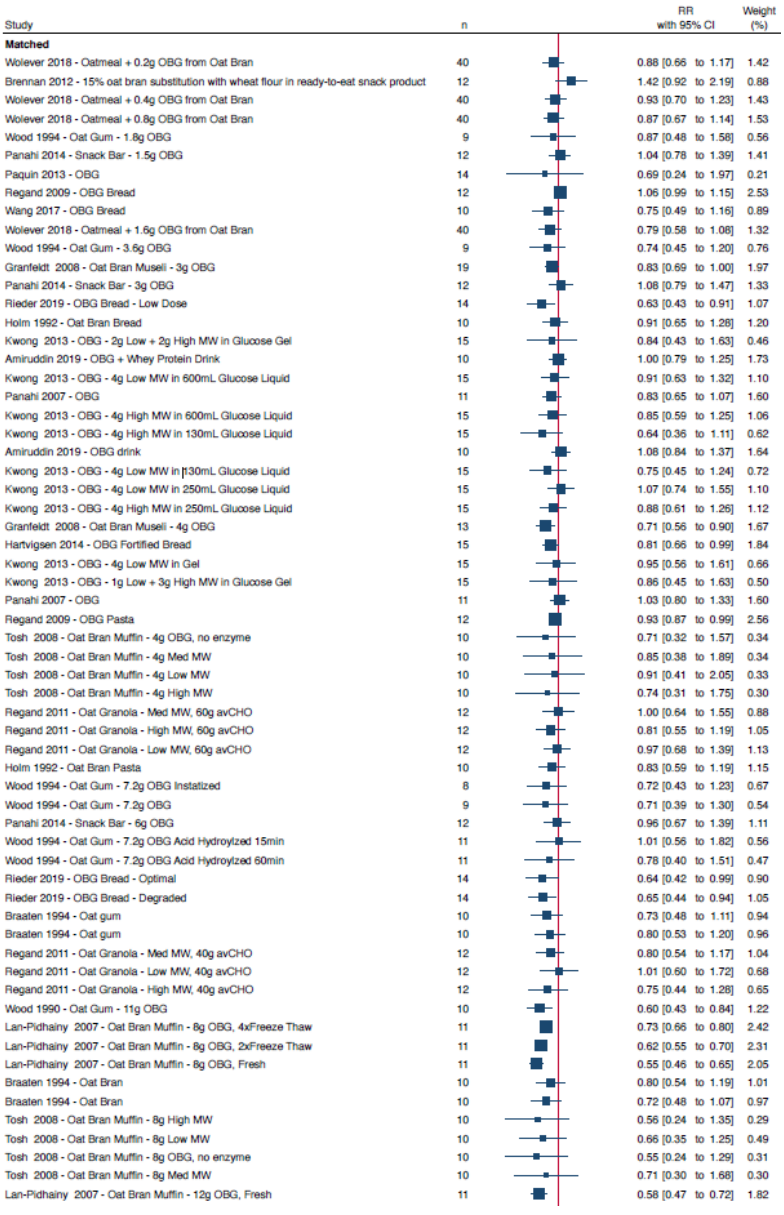
Supplementary Figure 5. RoB summary on the effect of OBG on insulin iAUC.



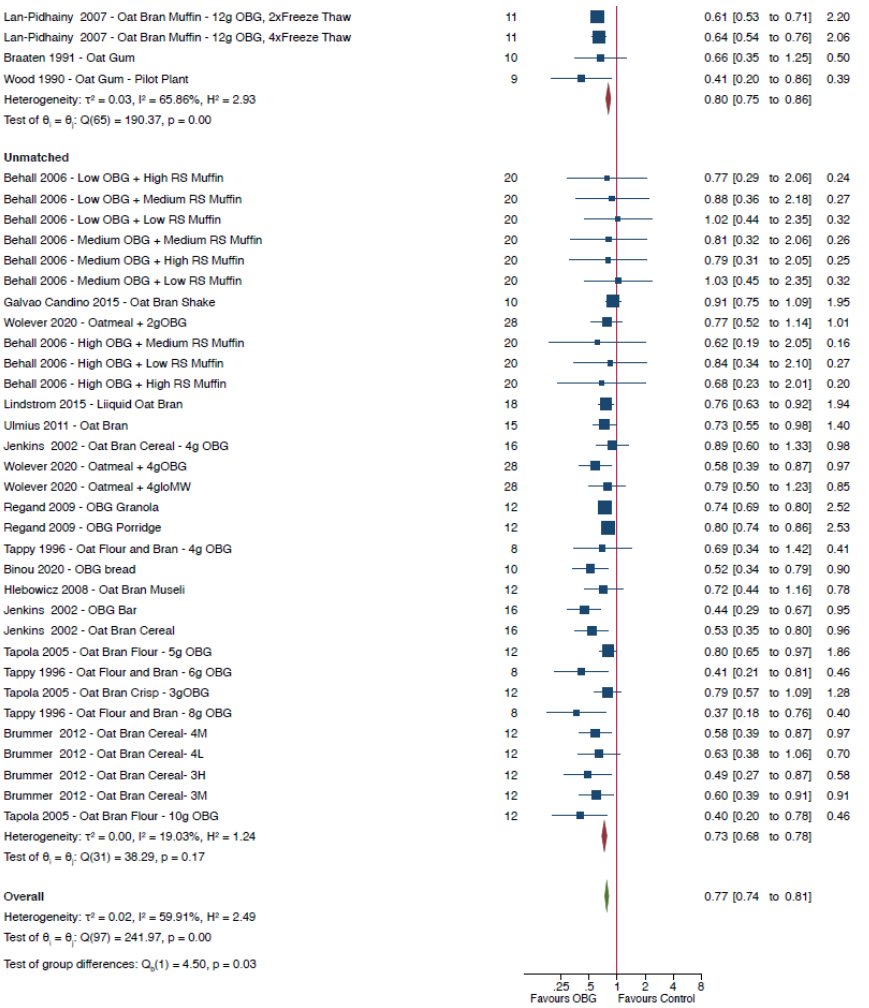
Supplementary Figure 6. RoB summary on the effect of OBG on insulin iPeak.



Supplementary Figure 7. Pooled effect estimates of OBG and glucose iAUC by type of comparator.

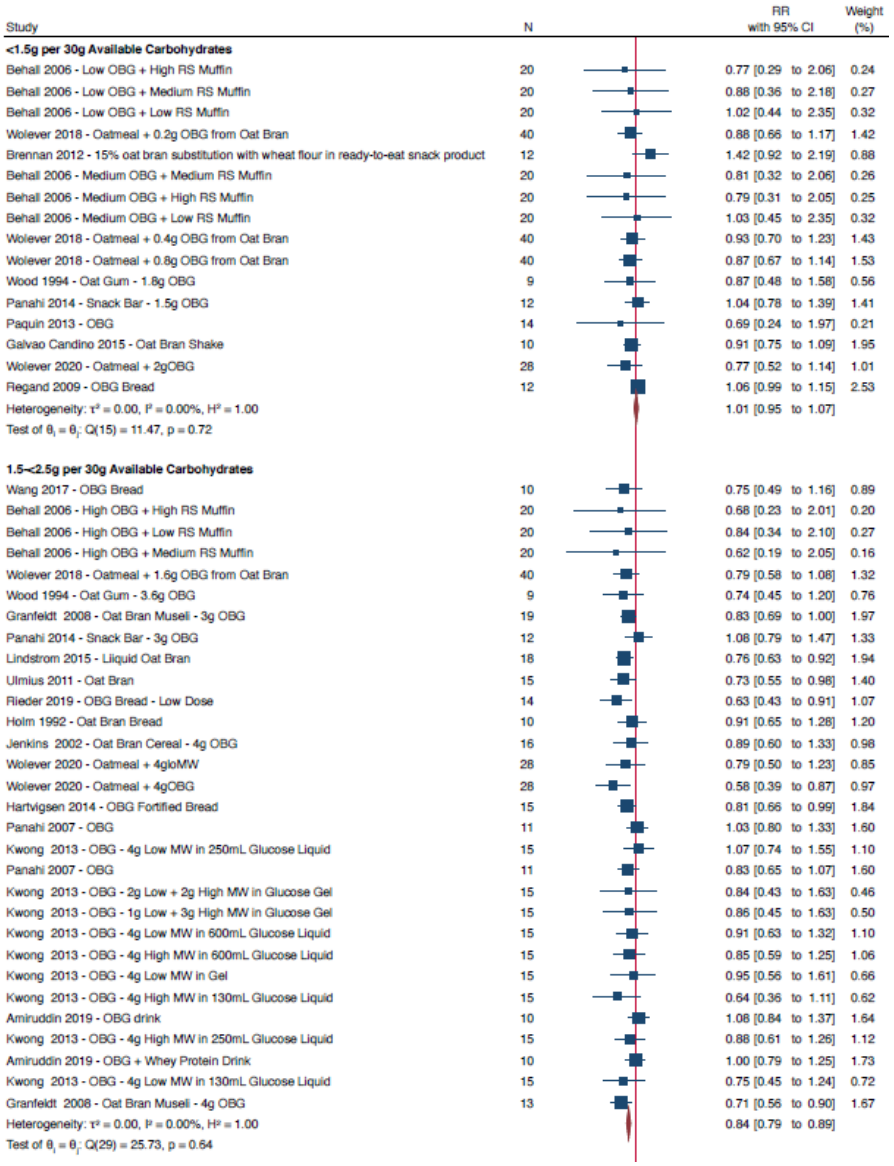


Supplementary Figure 7 *(continued)*

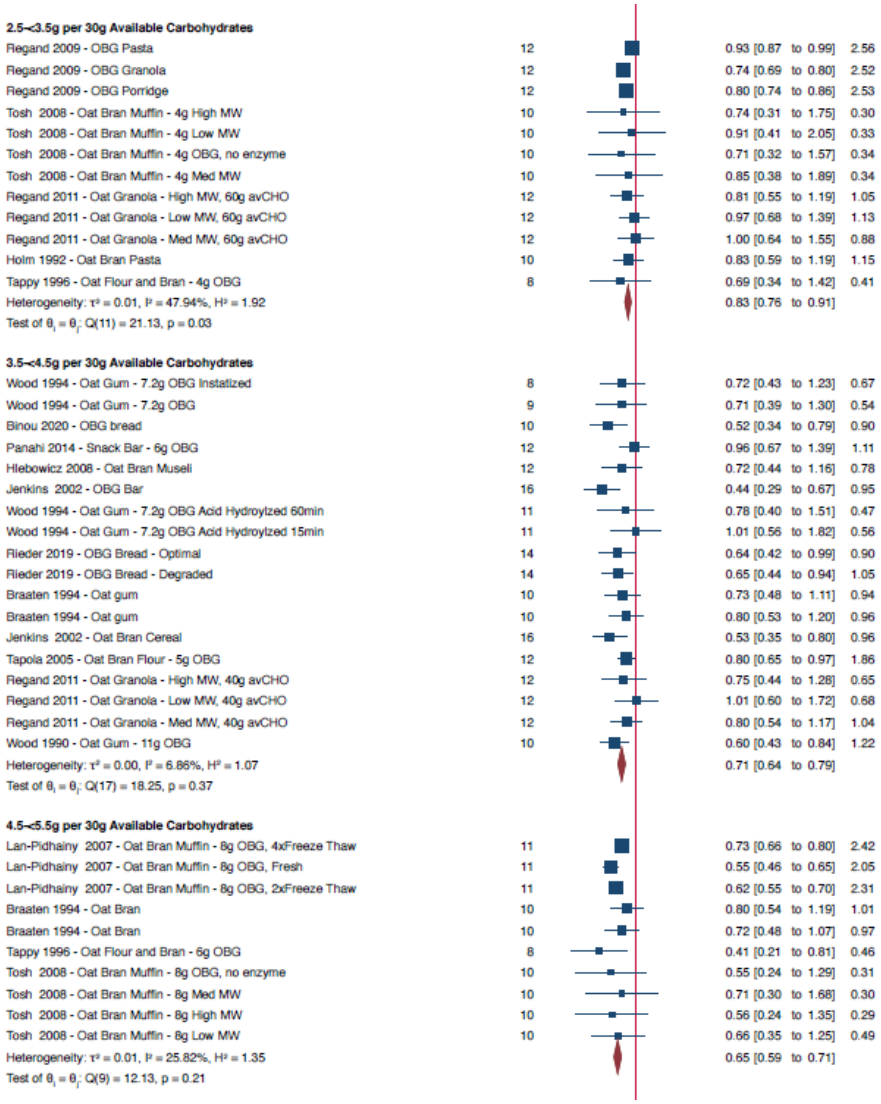


Data are expressed as ratio of means (RoMs) with 95% CIs using the generic inverse variance method modelled by random effects (DerSimonian-Laird). Trial comparisons within each subgroup are sorted from the lowest to the highest dose of oat β-glucan per 30g available carbohydrate portion The subgroup and total pooled effect estimates are represented by the red and green diamonds, respectively, with the size of the diamond representing the weight of the trial comparison in the overall analysis. Inter-study heterogeneity was assessed using the Cochran Q statistic and quantified using the I^2 statistic, with $P_Q<0.10$ and $I^2>50\%$ considered to be evidence of substantial heterogeneity. Group differences were tested using subgroup meta-analysis where $p<0.05$ was considered significant.

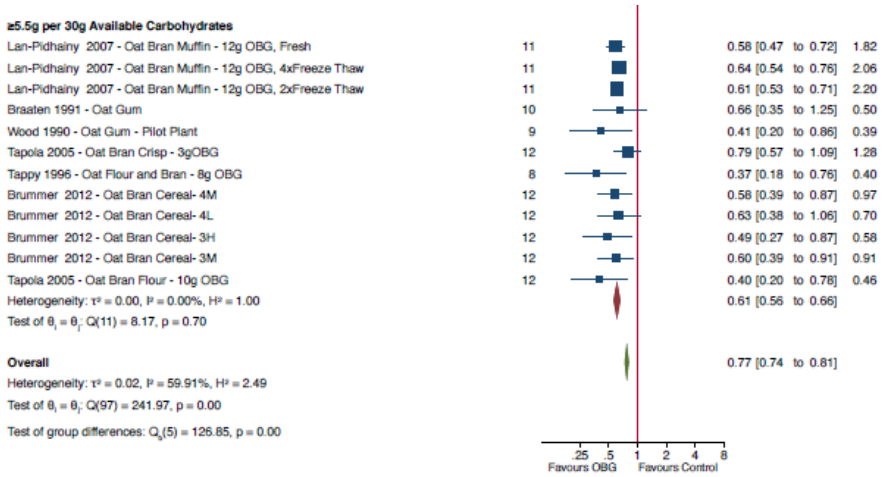
Supplementary Figure 8. Pooled effect estimates of OBG dose and glucose iAUC.



Supplementary Figure 8 *(continued)*

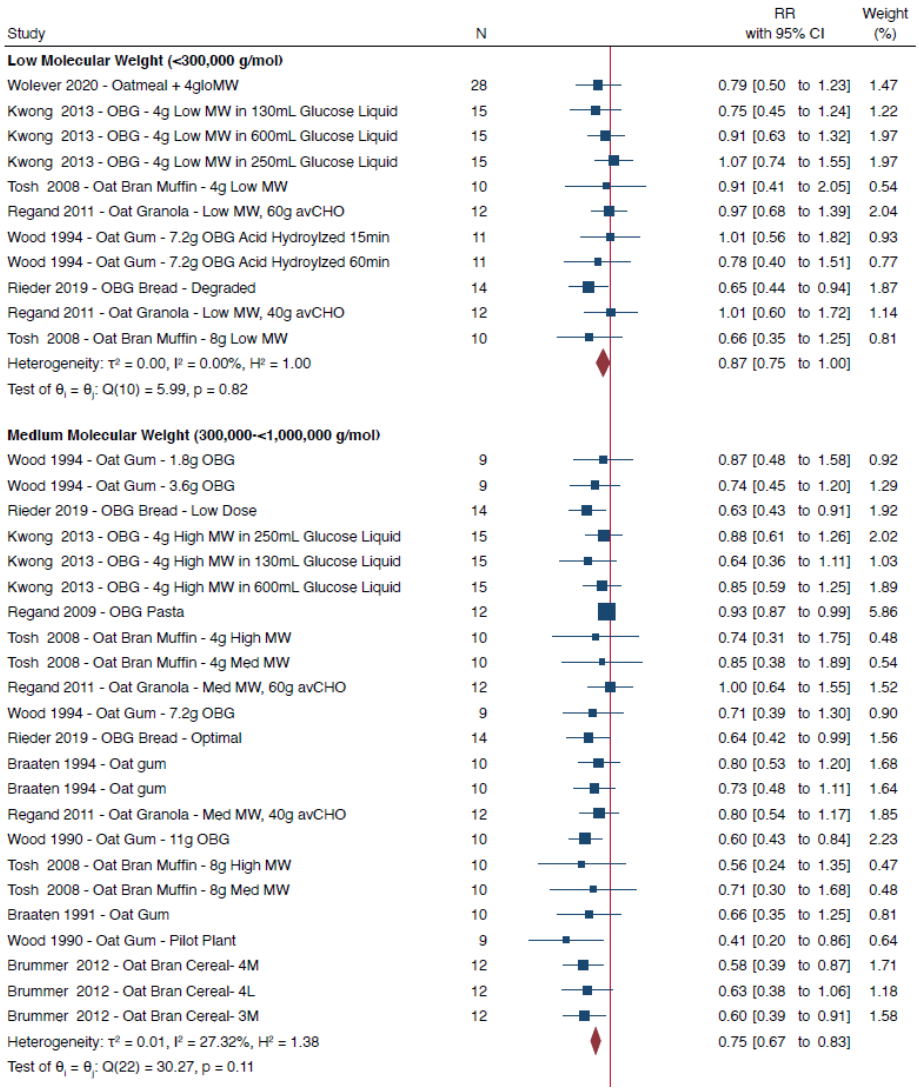


Supplementary Figure 8 *(continued)*

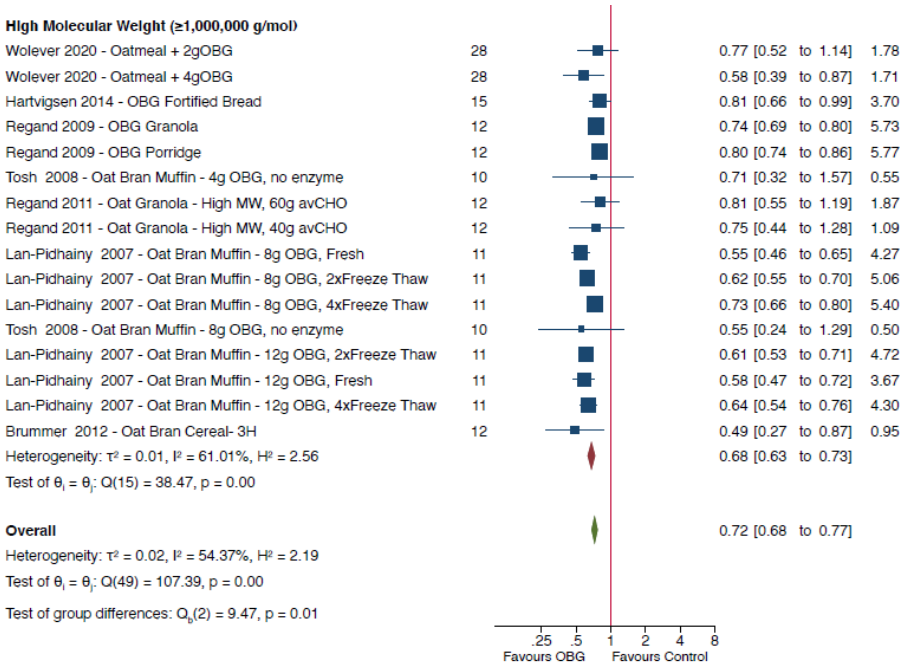


Data are expressed as ratio of means (RoMs) with 95% CIs using the generic inverse variance method modelled by random effects (DerSimonian-Laird). Trial comparisons within each subgroup are sorted from the lowest to the highest dose of oat β-glucan per 30g available carbohydrate portion The subgroup and total pooled effect estimates are represented by the red and green diamonds, respectively, with the size of the diamond representing the weight of the trial comparison in the overall analysis. Inter-study heterogeneity was assessed using the Cochran Q statistic and quantified using the I^2 statistic, with $P_Q<0.10$ and $I^2>50\%$ considered to be evidence of substantial heterogeneity. Group differences were tested using subgroup meta-analysis where $p<0.05$ was considered significant.

Supplementary Figure 9. Pooled effect estimates of OBG molecular weight and glucose iAUC.

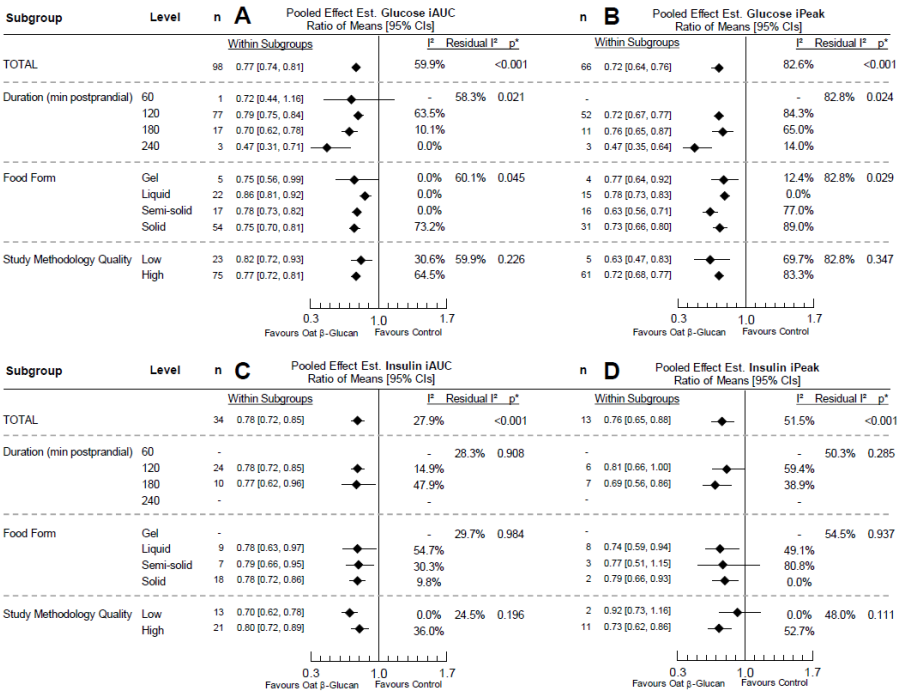


Supplementary Figure 9 *(continued)*



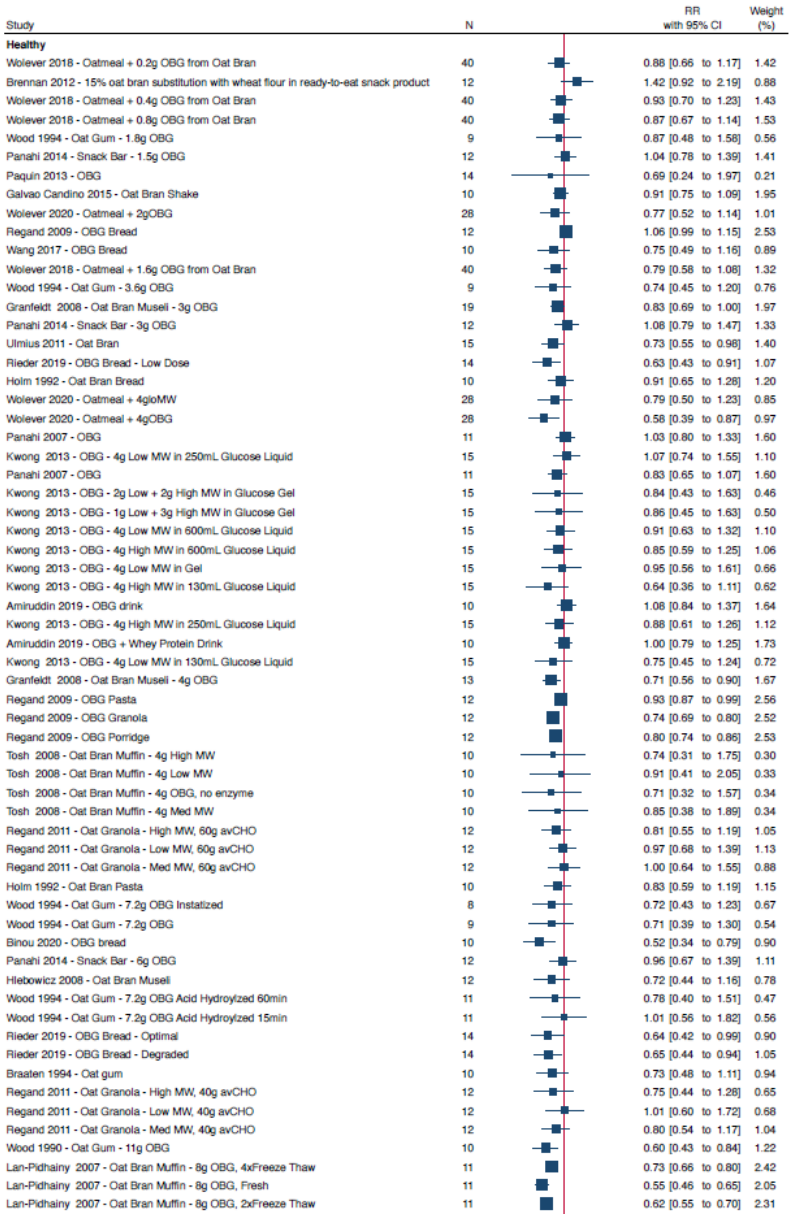
Molecular weight was reported in 47/94 trial comparisons. Data are expressed as ratio of means (RoMs) with 95% CIs using the generic inverse variance method modelled by random effects (DerSimonian-Laird). Trial comparisons within each subgroup are sorted from the lowest to the highest dose of oat β-glucan per 30g available carbohydrate portion The subgroup and total pooled effect estimates are represented by the red and green diamonds, respectively, with the size of the diamond representing the weight of the trial comparison in the overall analysis. Inter-study heterogeneity was assessed using the Cochran Q statistic and quantified using the I^2 statistic, with $P_Q<0.10$ and $I^2>50\%$ considered to be evidence of substantial heterogeneity. Group differences were tested using subgroup meta-analysis where $p<0.05$ was considered significant.

Supplementary Figure 10. Summary plot of pooled effect estimates of OBG on glucose and insulin iAUC and iPeak by study postprandial duration, intervention food form and study methodology quality.

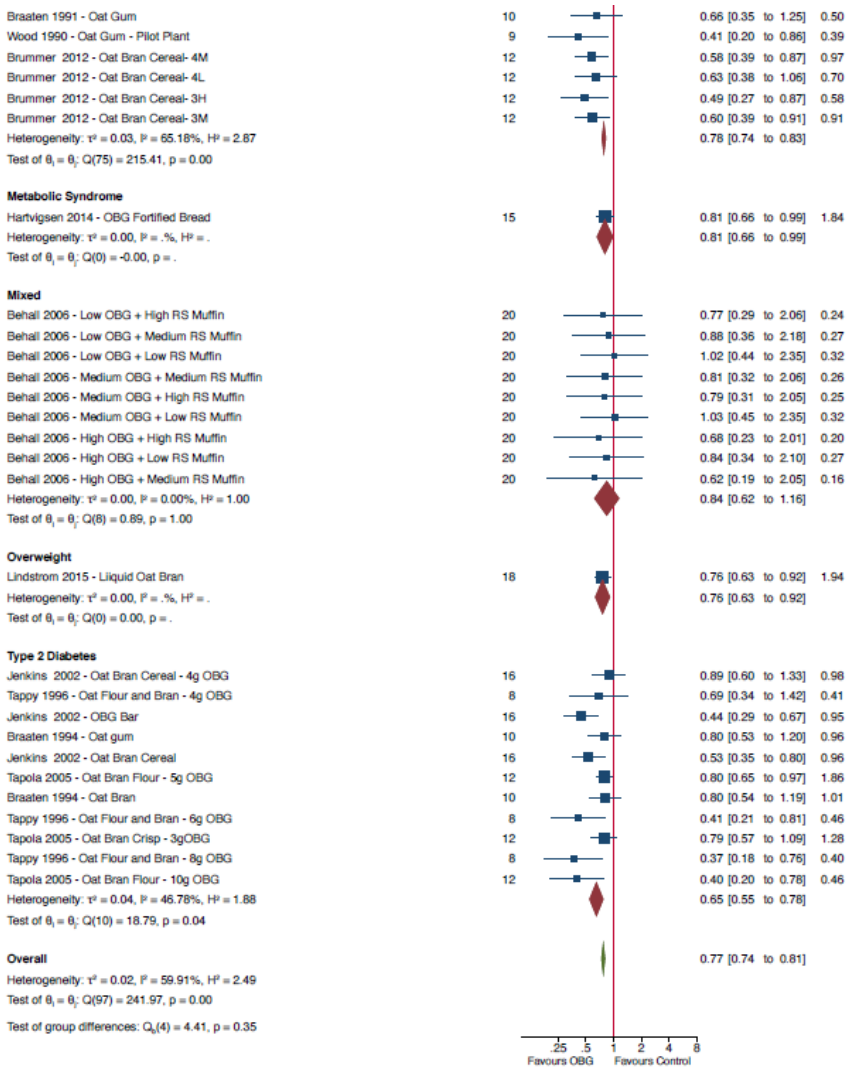


Panel A: incremental area under the curve (iAUC) for glucose; **Panel B**, incremental peak rise (iPeak) for glucose; **Panel C**: iAUC for insulin; **Panel D**: iPeak for insulin. Pooled effect estimates are expressed as ratios of means (RoMs, black diamond) with 95% CIs (solid lines). Pooled analyses were conducted using the generic inverse variance method with random effects models. Interstudy heterogeneity was tested by the Cochran Q statistic (χ^2) at a significance level of $P_Q<0.10$ (not shown) and quantified by I^2. Differences between subgroups were tested using meta-regression and the significance level was reported as a p-value, where $p<0.05$ was considered significant. The residual I^2 value represents unexplained heterogeneity for each subgroup. n, number of trial comparisons.

Supplementary Figure 11. Pooled effect estimates of OBG and glucose iAUC by health status.

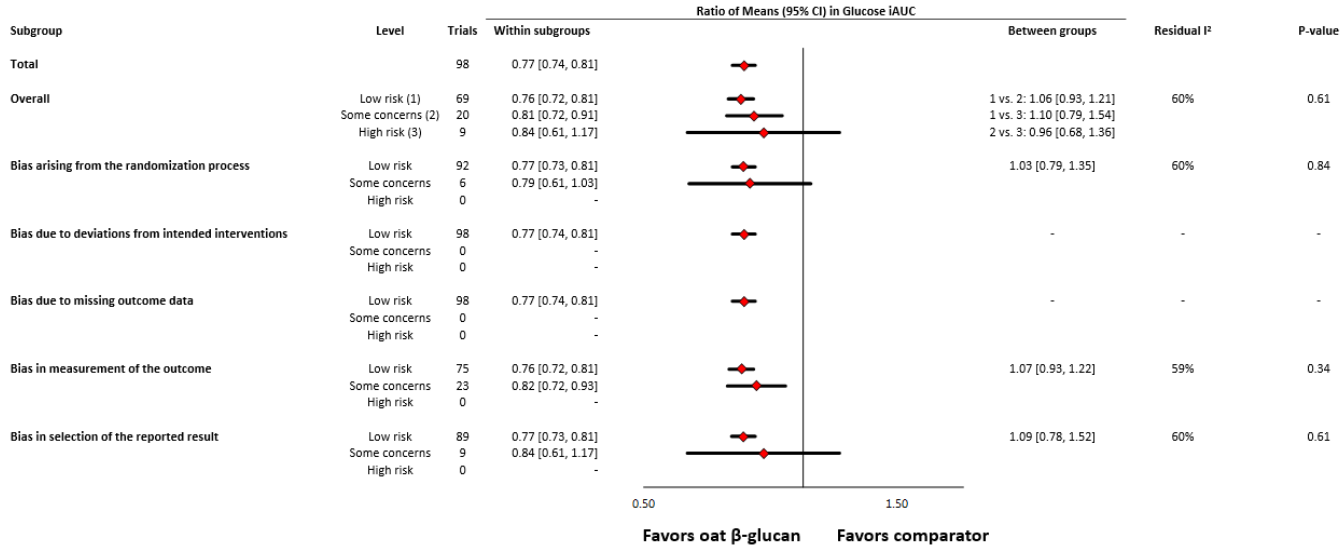


Supplementary Figure 11 *(continued)*



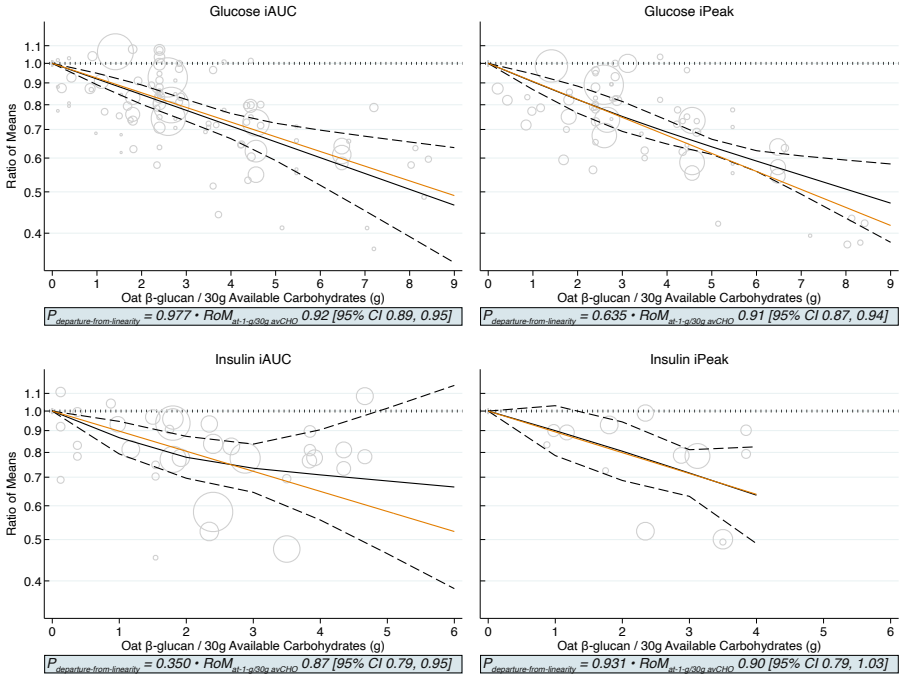
Data are expressed as ratio of means (RoMs) with 95% CIs using the generic inverse variance method modelled by random effects (DerSimonian-Laird). Trial comparisons within each subgroup are sorted from the lowest to the highest dose of oat β-glucan per 30g available carbohydrate portion The subgroup and total pooled effect estimates are represented by the red and green diamonds, respectively, with the size of the diamond representing the weight of the trial comparison in the overall analysis. Inter-study heterogeneity was assessed using the Cochran Q statistic and quantified using the I^2 statistic, with $P_Q<0.10$ and $I^2>50\%$ considered to be evidence of substantial heterogeneity. Group differences were tested using subgroup meta-analysis where $p<0.05$ was considered significant.

Supplementary Figure 12. RoB subgroup analysis of OBG on glucose iAUC



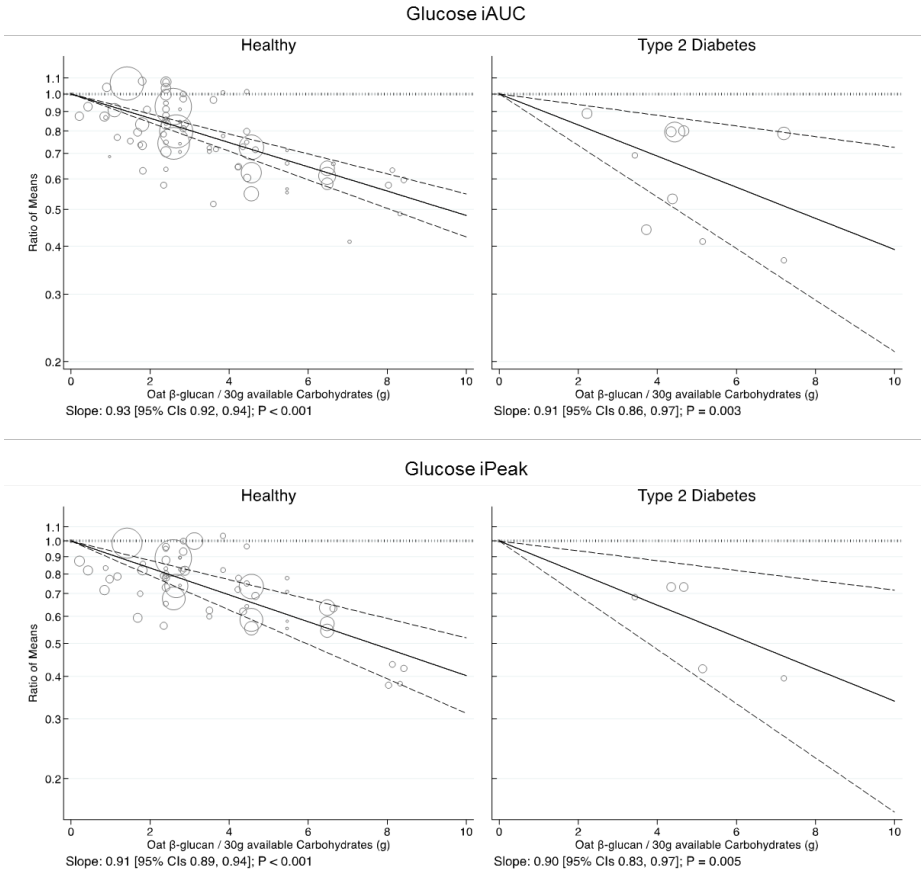
Data are expressed as ratio of means (RoM) with 95% confidence intervals (CIs). Differences between subgroups were tested using meta-regression and the significance level was reported as a p-value, where $p<0.05$ was considered significant. Pooled effect estimates for each subgroup are represented by the diamonds. The dashed line represents the pooled effect estimate for the overall analysis. The residual I^2 value represents remaining between-study variation after adjustment for the subgroup.

Supplementary Figure 13. Pooled dose-response relationship (linear and non-linear) between OBG and glucose and insulin iAUC and iPeak.



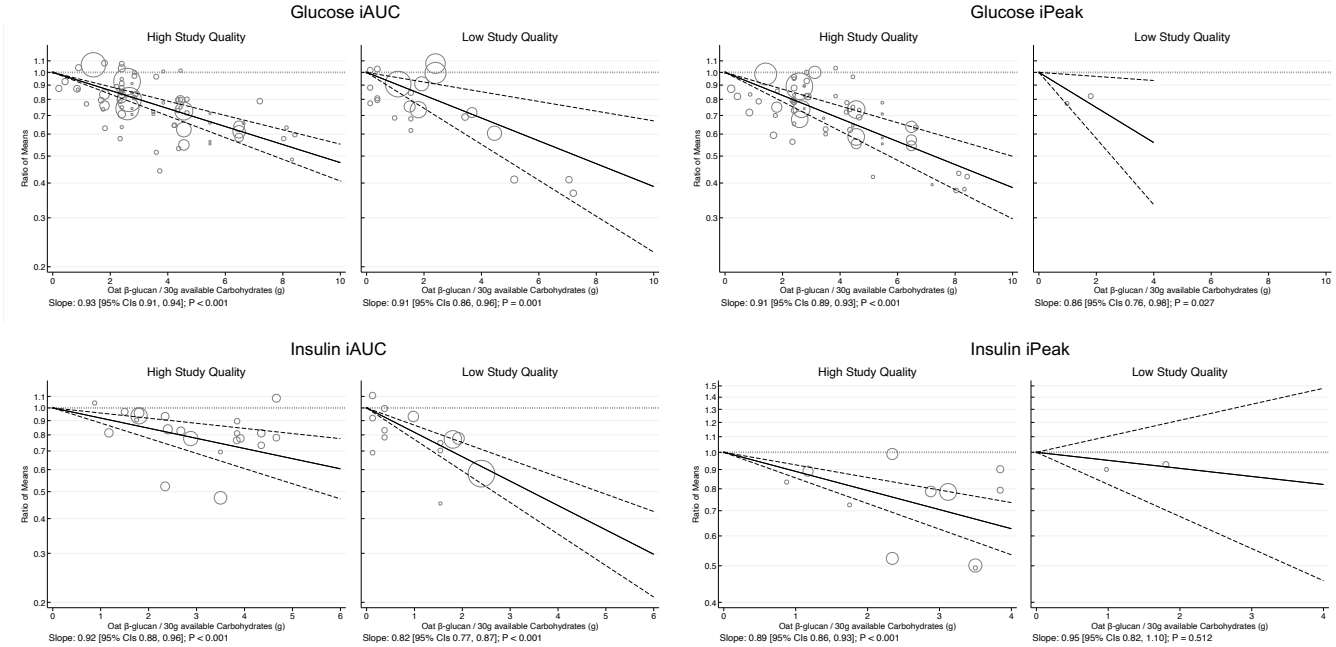
Individual trial comparisons are represented by the circles, with the weight of the comparison in the overall analysis represented by the size of the circles. The orange solid line represents the linear dose response which was modelled using one-stage random effects with the generic inverse variance and restricted maximum likelihood methods, assuming a linear function. The solid black line and outer black dashed lines represent the non-linear dose response and 95% CIs, respectively, which were modelled with restricted cubic splines with 3 knots (Harrell's recommended percentiles). Departure from linearity was assessed using the Wald's test. The following trial comparisons were outliers and not shown in the figure for Glucose iAUC but are included in the pooled dose response: Tapola 2005 (10g OBG intervention. dose: 22.6, RR, 0.40 [95% CI, 0.20 to 0.78]) and Brennan 2012 (dose: 0.25, RR,1.42 [95% CI, 0.92 to 2.19]).

Supplementary Figure 14. Pooled linear dose-response relationship by health status between OBG and glucose iAUC and iPeak.



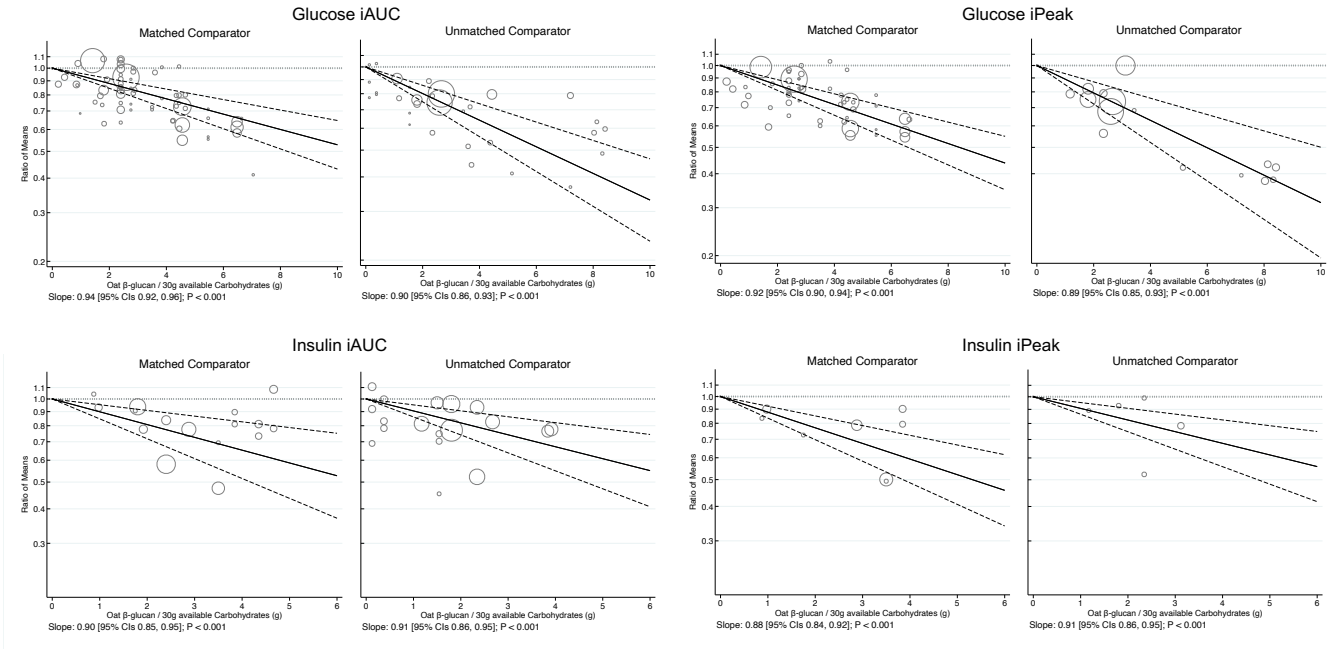
Individual trial comparisons are represented by the circles, with the weight of the comparison in the overall analysis represented by the size of the circles. The fitted dose response estimate is represented by the central solid line with the 95% confidence intervals (CIs) represented by the outer dashed lines, which was modelled using one-stage random effects with the generic inverse variance and restricted maximum likelihood methods, assuming a linear function. The following trial comparisons were outliers and not shown in the figure for Glucose iAUC Healthy and Type 2 Diabetes figures but are included in the pooled dose response: Brennan 2012 (dose: 0.25, RR,1.42 [95% CI, 0.92 to 2.19]) and Tapola 2005 (10g oat β-glucan intervention, dose: 22.6, RR, 0.40 [95% CI, 0.20 to 0.78]), respectively.

Supplementary Figure 15. Pooled linear dose-response relationship by study methodology quality between OBG and glucose and insulin iAUC and iPeak.



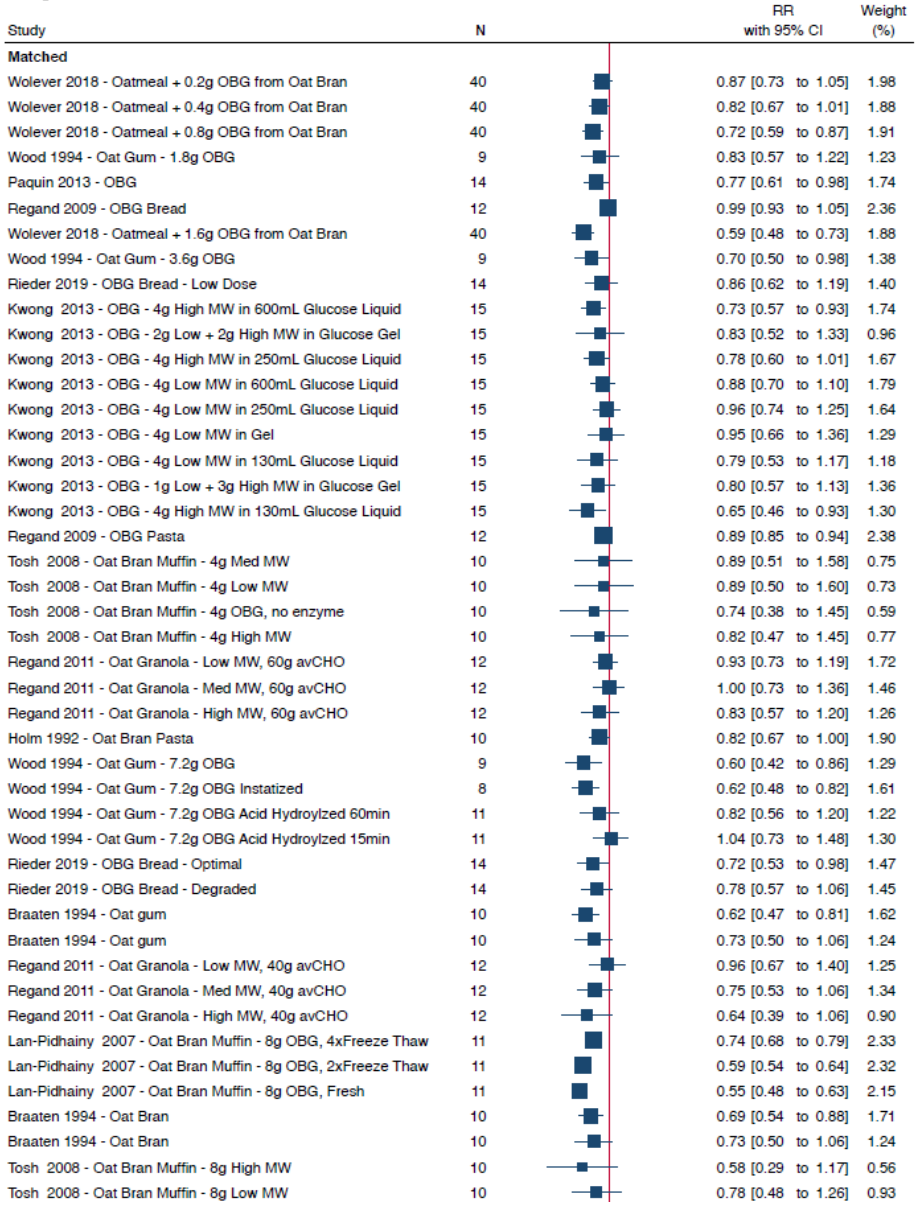
Individual trial comparisons are represented by the circles, with the weight of the comparison in the overall analysis represented by the size of the circles. The fitted dose response estimate is represented by the central solid line with the 95% confidence intervals (CIs) represented by the outer dashed lines, which was modelled using one-stage random effects with the generic inverse variance and restricted maximum likelihood methods, assuming a linear function. The following trial comparisons were outliers and not shown in the figure for Glucose iAUC High Quality and Low Quality figures but are included in the pooled dose response: Tapola 2005 (10g oat β-glucan intervention, dose: 22.6, RR, 0.40 [95% CI, 0.20 to 0.78]) and Brennan 2012 (dose: 0.25, RR,1.42 [95% CI, 0.92 to 2.19]), respectively.

Supplementary Figure 16. Pooled linear dose-response relationship by comparator type between OBG and glucose and insulin iAUC and iPeak.

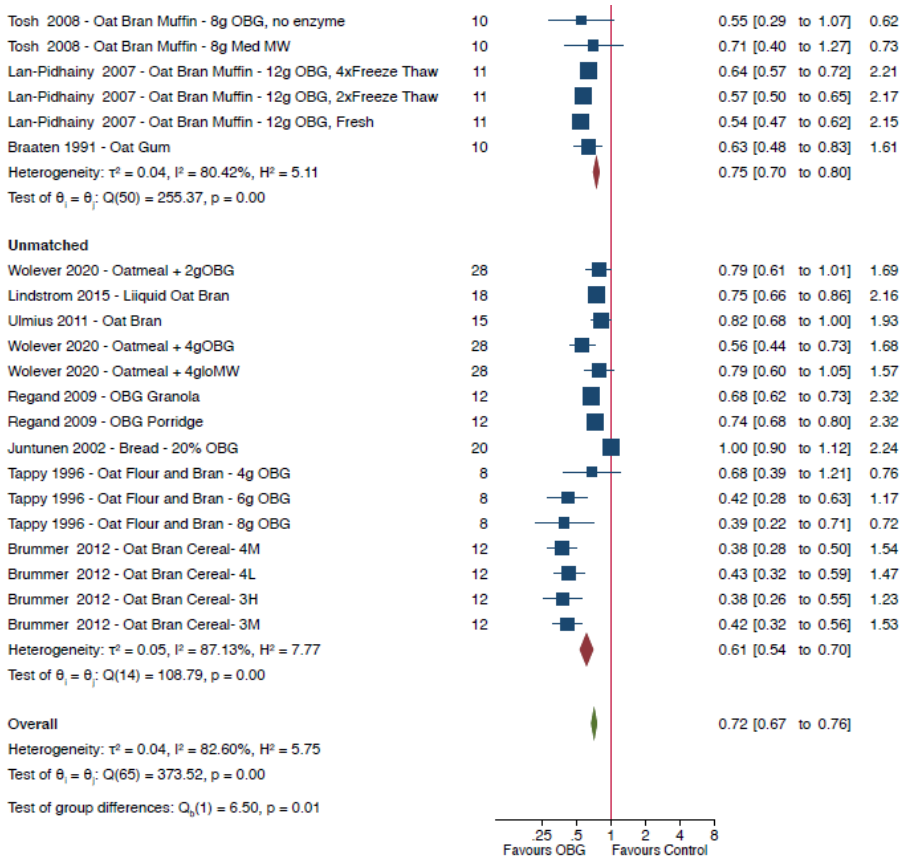


Individual trial comparisons are represented by the circles, with the weight of the comparison in the overall analysis represented by the size of the circles. The fitted dose response estimate is represented by the central solid line with the 95% confidence intervals (CIs) represented by the outer dashed lines, which was modelled using one-stage random effects with the generic inverse variance and restricted maximum likelihood methods, assuming a linear function. The following trial comparisons were outliers and not shown in the figure for Glucose iAUC Matched and Unmatched Comparators figures but are included in the pooled dose response: Brennan 2012 (dose: 0.25, RR,1.42 [95% CI, 0.92 to 2.19]) and Tapola 2005 (10g oat β-glucan intervention, dose: 22.6, RR, 0.40 [95% CI, 0.20 to 0.78]), respectively.

Supplementary Figure 17. Pooled effect estimates of OBG and glucose iPeak by type of comparator.

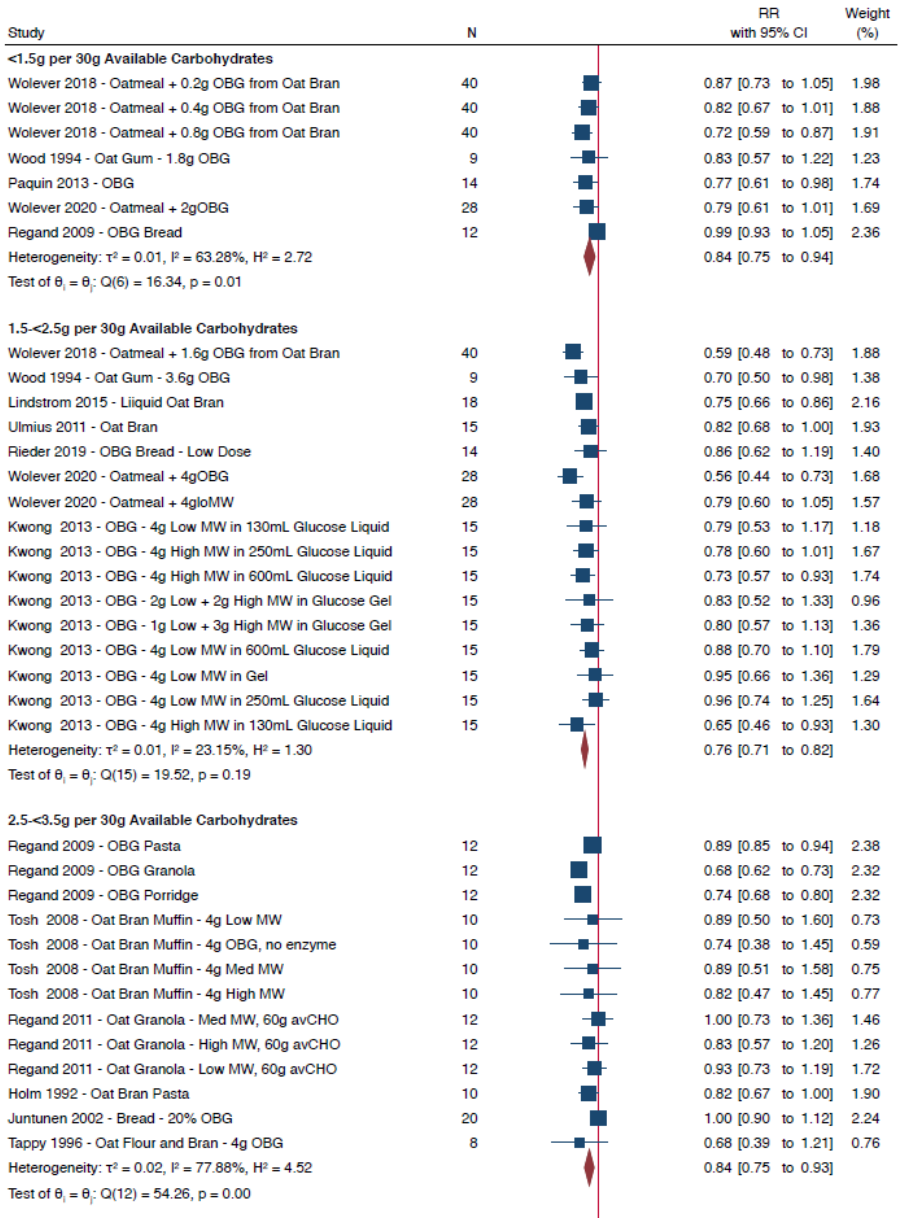


Supplementary Figure 17 *(continued)*

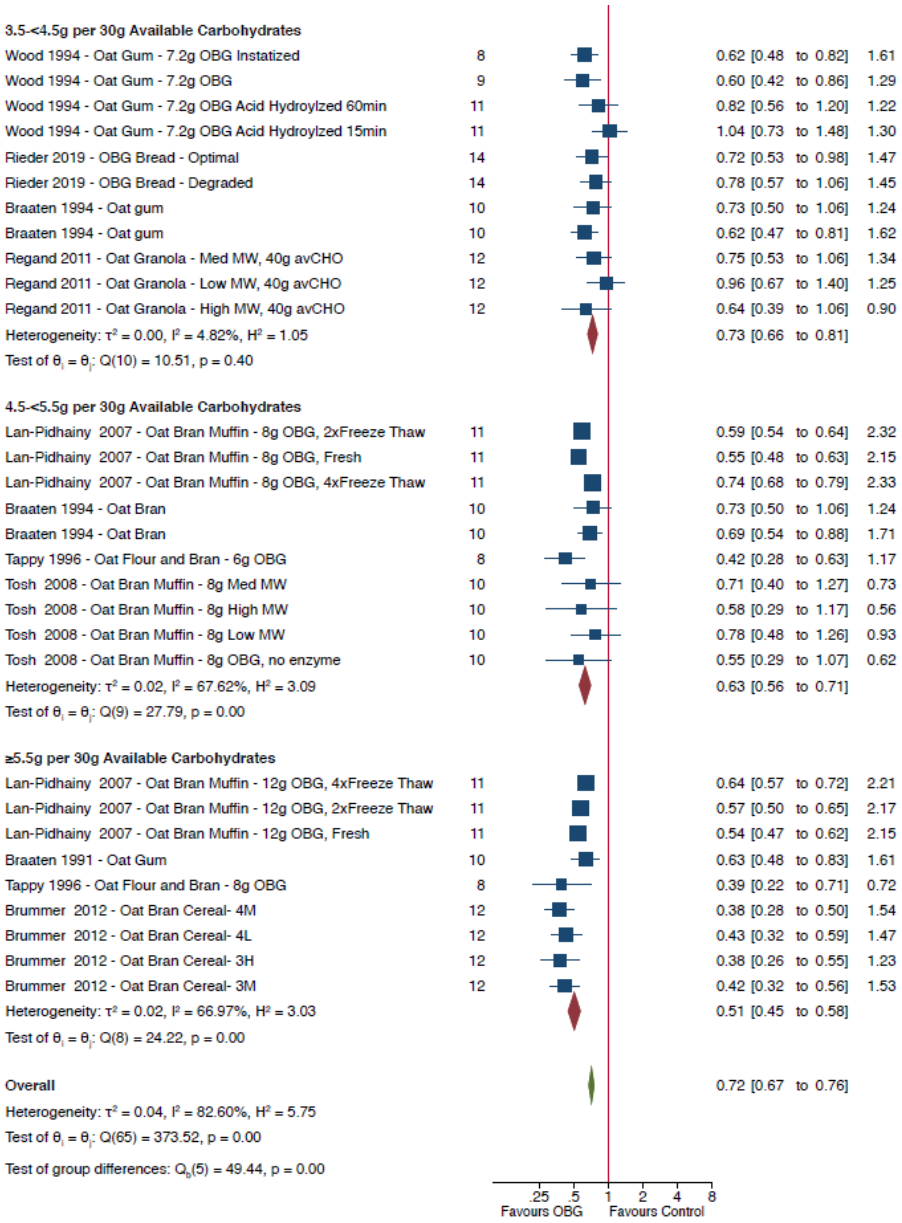


Data are expressed as ratio of means (RoMs) with 95% CIs using the generic inverse variance method modelled by random effects (DerSimonian-Laird). Trial comparisons within each subgroup are sorted from the lowest to the highest dose of oat β-glucan per 30g available carbohydrate portion The subgroup and total pooled effect estimates are represented by the red and green diamonds, respectively, with the size of the diamond representing the weight of the trial comparison in the overall analysis. Inter-study heterogeneity was assessed using the Cochran Q statistic and quantified using the I^2 statistic, with $P_Q<0.10$ and $I^2>50\%$ considered to be evidence of substantial heterogeneity. Group differences were tested using subgroup meta-analysis where $p<0.05$ was considered significant.

Supplementary Figure 18. Pooled effect estimates of OBG dose and glucose iPeak.

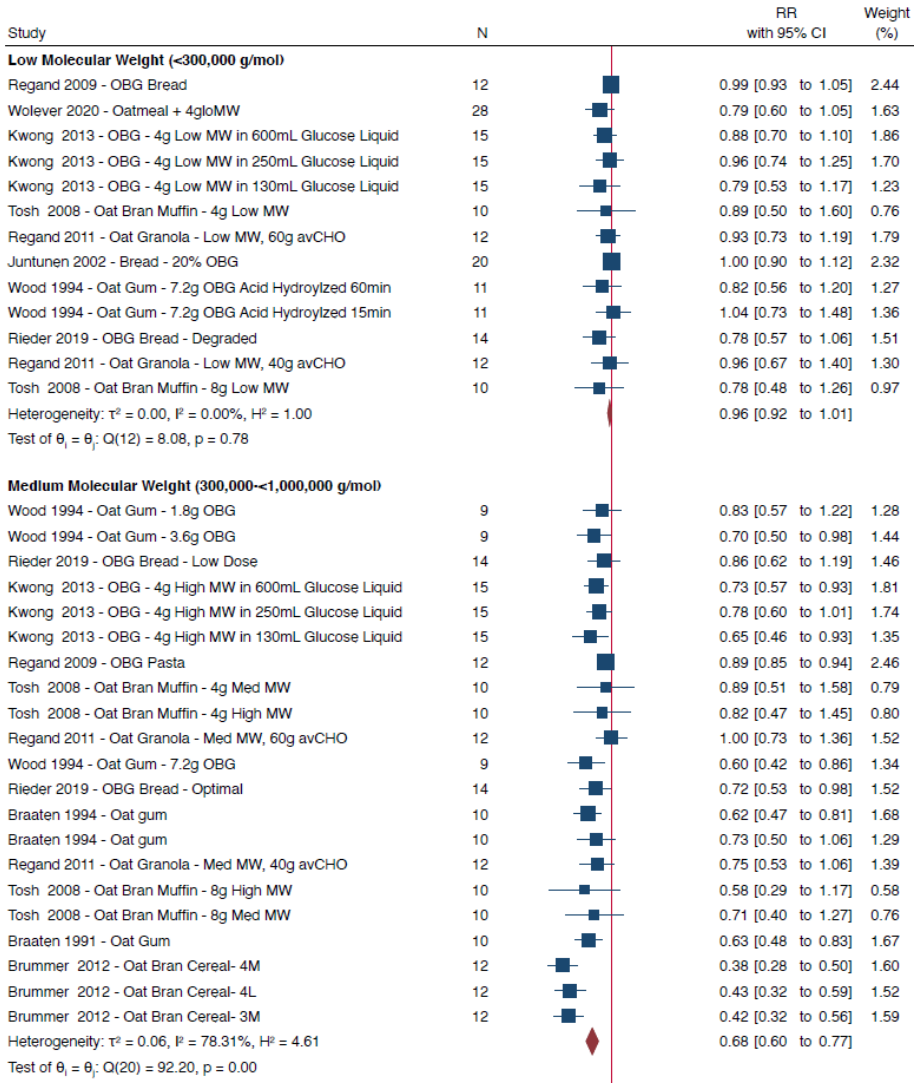


Supplementary Figure 18 *(continued)*

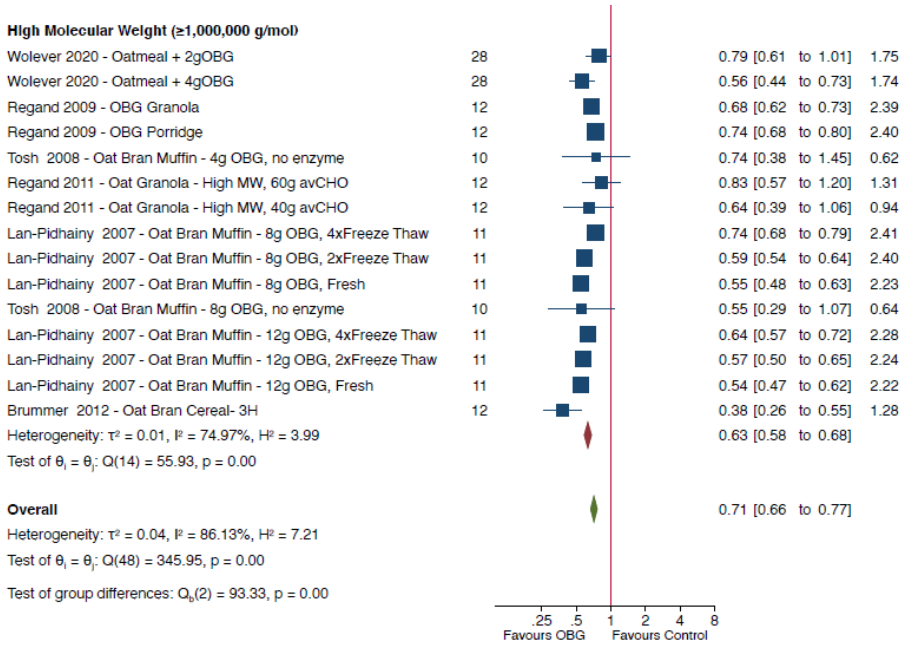


Data are expressed as ratio of means (RoMs) with 95% CIs using the generic inverse variance method modelled by random effects (DerSimonian-Laird). Trial comparisons within each subgroup are sorted from the lowest to the highest dose of oat β-glucan per 30g available carbohydrate portion The subgroup and total pooled effect estimates are represented by the red and green diamonds, respectively, with the size of the diamond representing the weight of the trial comparison in the overall analysis. Inter-study heterogeneity was assessed using the Cochran Q statistic and quantified using the I^2 statistic, with $P_Q<0.10$ and $I^2>50\%$ considered to be evidence of substantial heterogeneity. Group differences were tested using subgroup meta-analysis where $p<0.05$ was considered significant.

Supplementary Figure 19. Pooled effect estimates of OBG molecular weight and glucose iPeak.

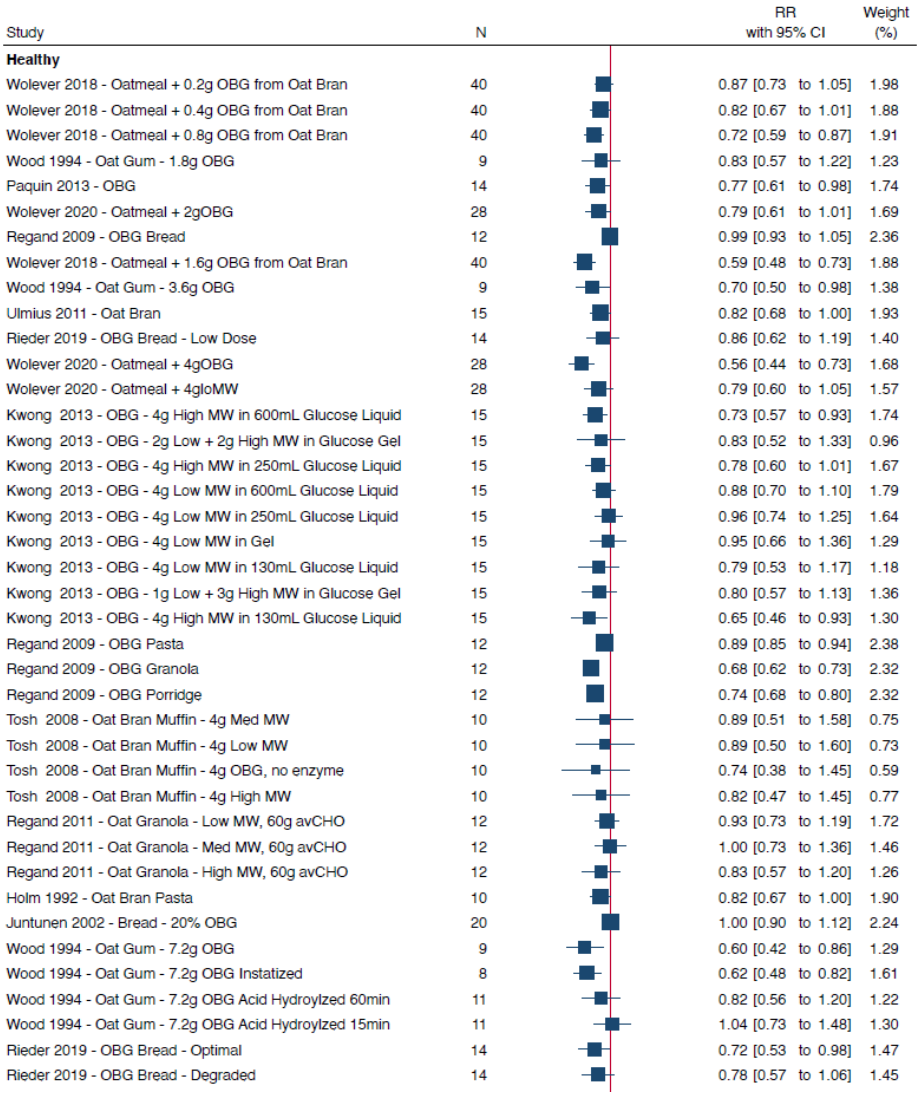


Supplementary Figure 19 *(continued)*

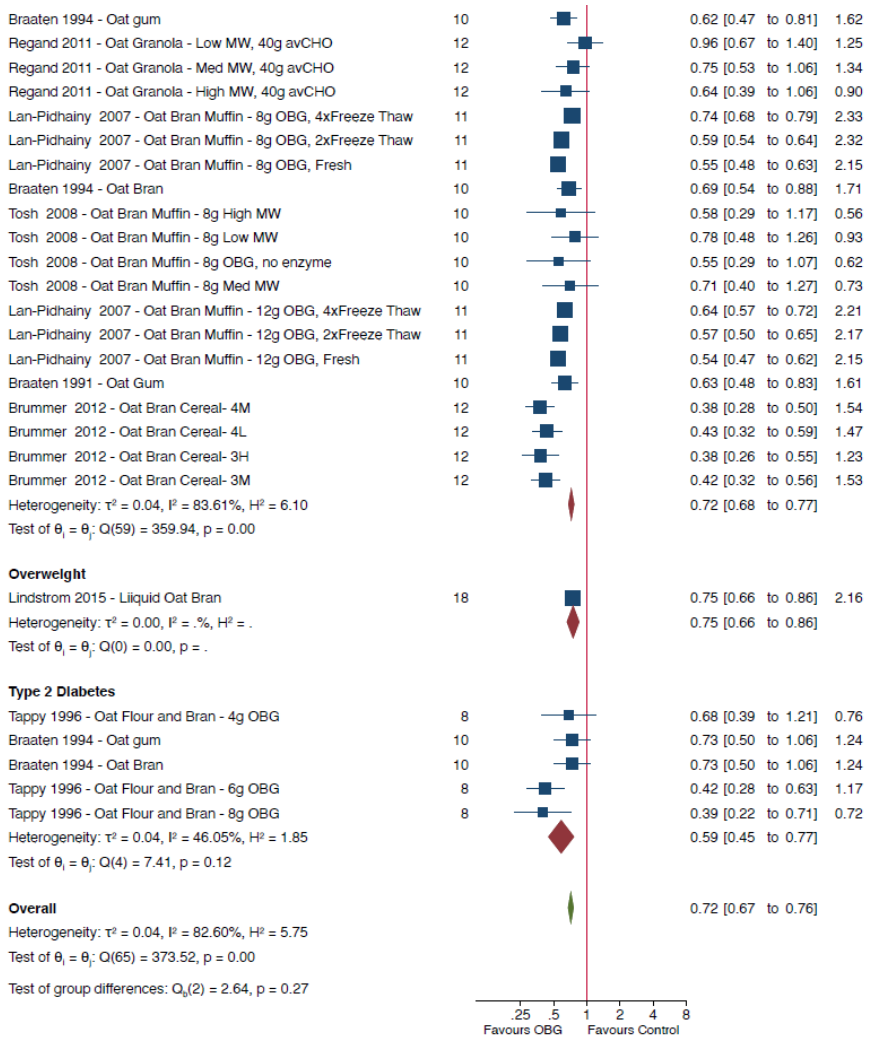


Data are expressed as ratio of means (RoMs) with 95% CIs using the generic inverse variance method modelled by random effects (DerSimonian-Laird). Trial comparisons within each subgroup are sorted from the lowest to the highest dose of oat β-glucan per 30g available carbohydrate portion The subgroup and total pooled effect estimates are represented by the red and green diamonds, respectively, with the size of the diamond representing the weight of the trial comparison in the overall analysis. Inter-study heterogeneity was assessed using the Cochran Q statistic and quantified using the I^2 statistic, with $P_Q<0.10$ and $I^2>50\%$ considered to be evidence of substantial heterogeneity. Group differences were tested using subgroup meta-analysis where $p<0.05$ was considered significant.

Supplementary Figure 20. Pooled effect estimates of OBG and glucose iPeak by health status.

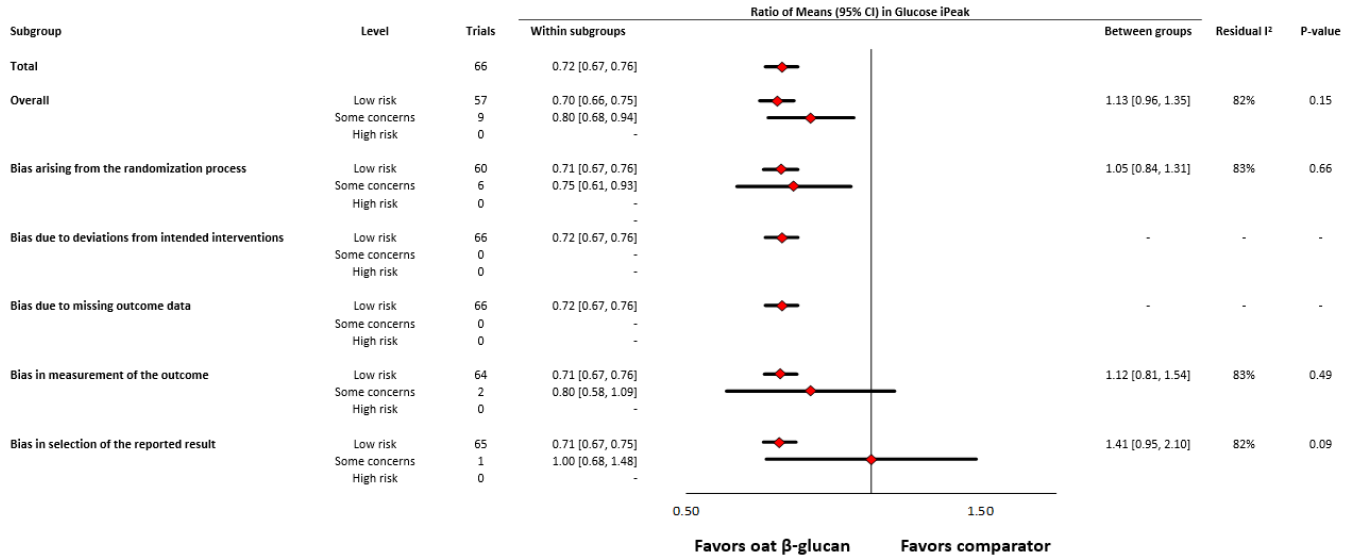


Supplementary Figure 20 *(continued*



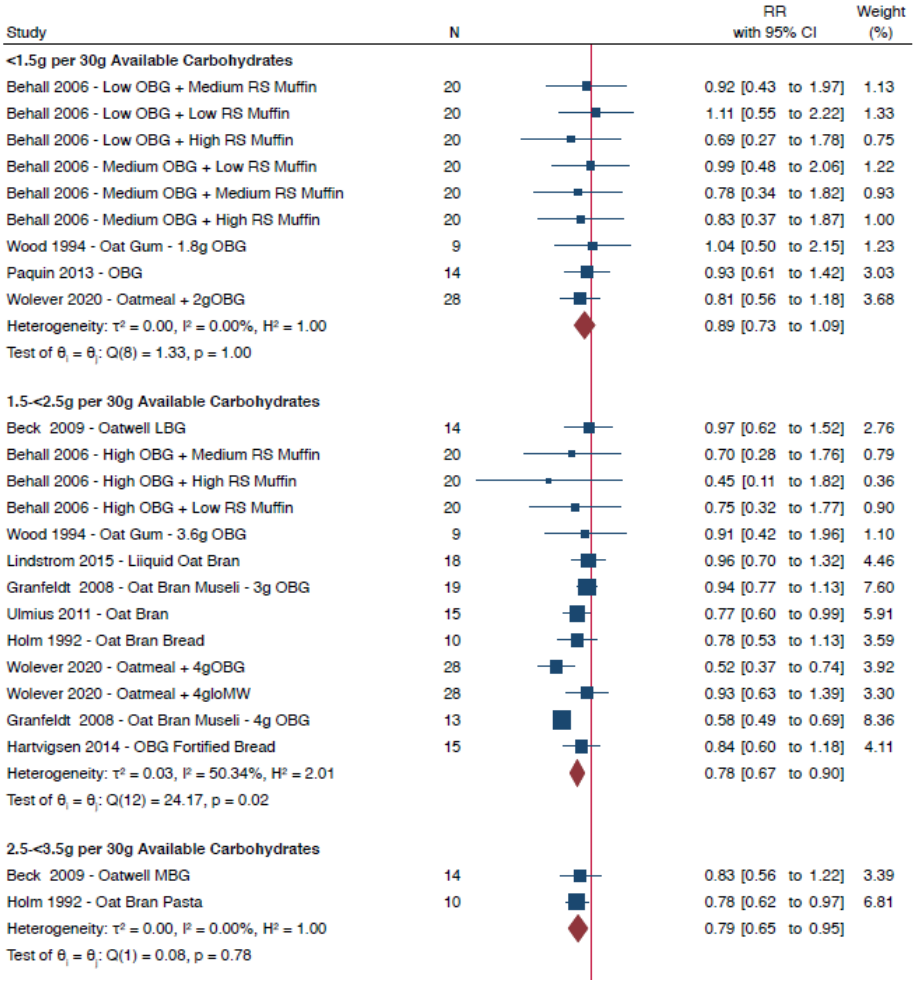
Data are expressed as ratio of means (RoMs) with 95% CIs using the generic inverse variance method modelled by random effects (DerSimonian-Laird). Trial comparisons within each subgroup are sorted from the lowest to the highest dose of oat β-glucan per 30g available carbohydrate portion The subgroup and total pooled effect estimates are represented by the red and green diamonds, respectively, with the size of the diamond representing the weight of the trial comparison in the overall analysis. Inter-study heterogeneity was assessed using the Cochran Q statistic and quantified using the I^2 statistic, with $P_Q<0.10$ and $I^2>50\%$ considered to be evidence of substantial heterogeneity. Group differences were tested using subgroup meta-analysis where $p<0.05$ was considered significant.

Supplementary Figure 21. RoB subgroup analysis of OBG on glucose iPeak

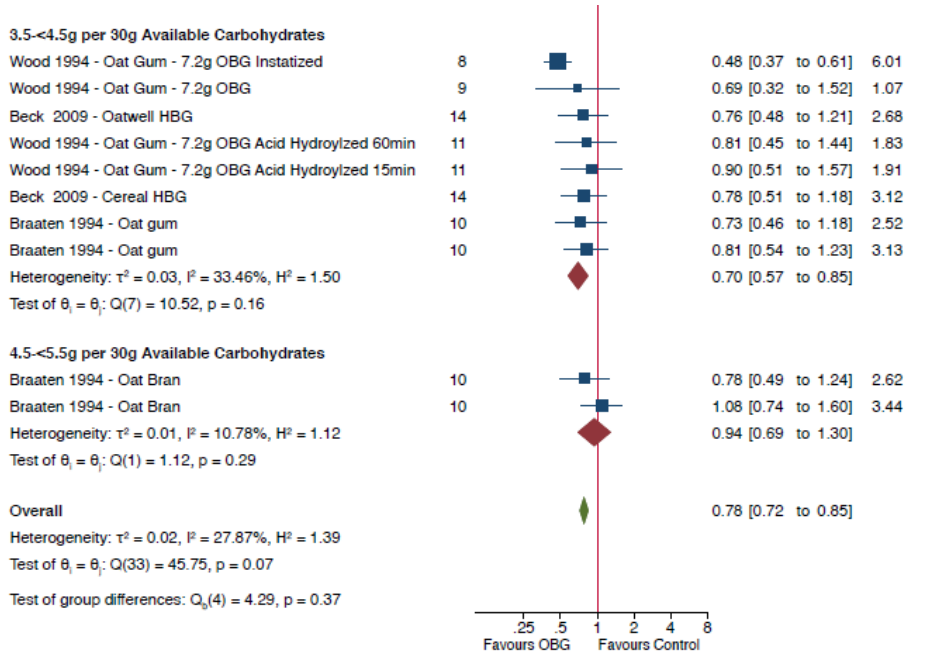


Data are expressed as ratio of means (RoM) with 95% confidence intervals (CIs). Differences between subgroups were tested using meta-regression and the significance level was reported as a p-value, where $p<0.05$ was considered significant. Pooled effect estimates for each subgroup are represented by the diamonds. The dashed line represents the pooled effect estimate for the overall analysis. The residual I^2 value represents remaining between-study variation after adjustment for the subgroup.

Supplementary Figure 22. Pooled effect estimates of OBG dose and insulin iAUC.

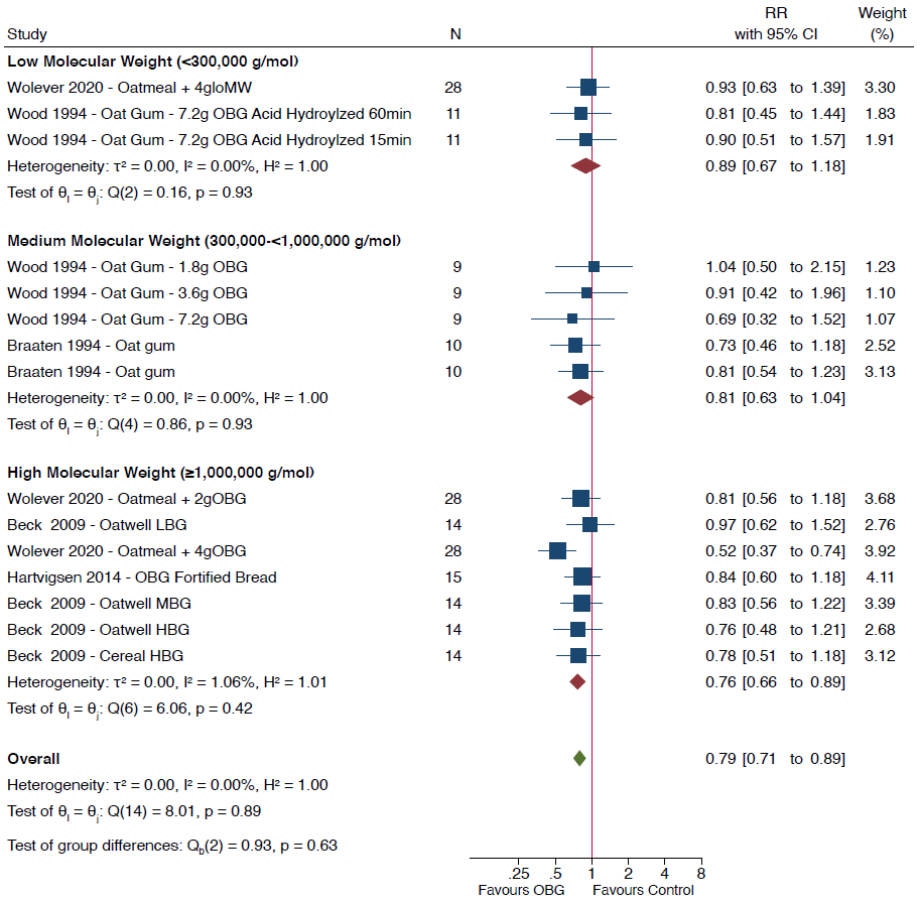


Supplementary Figure 22 *(continued)*



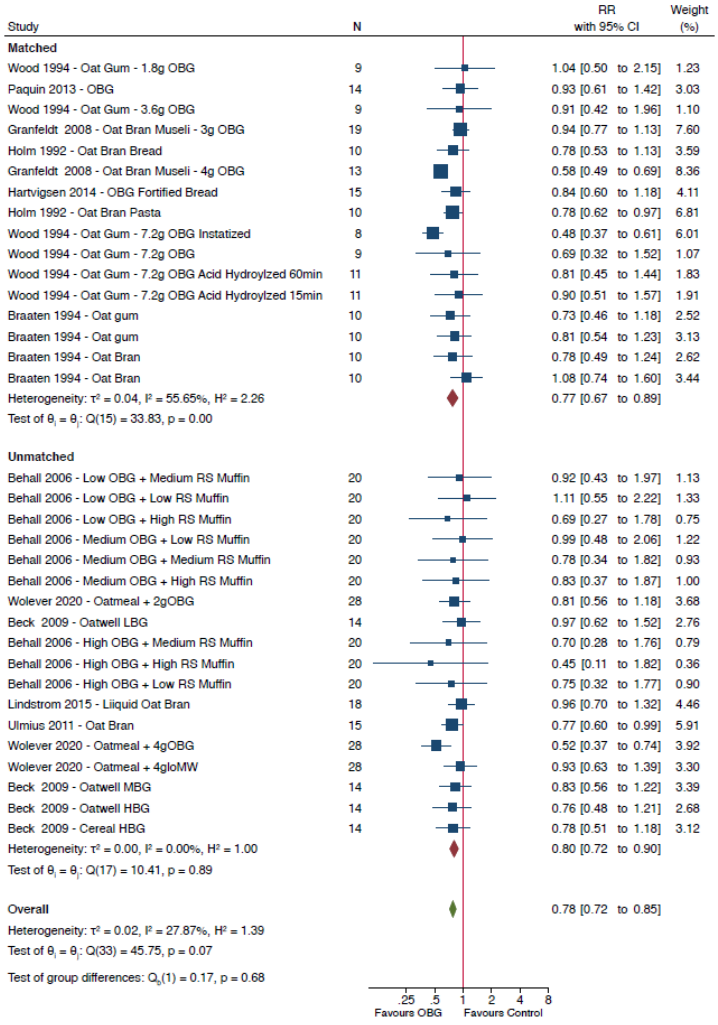
Data are expressed as ratio of means (RoMs) with 95% CIs using the generic inverse variance method modelled by random effects (DerSimonian-Laird). Trial comparisons within each subgroup are sorted from the lowest to the highest dose of oat β-glucan per 30g available carbohydrate portion The subgroup and total pooled effect estimates are represented by the red and green diamonds, respectively, with the size of the diamond representing the weight of the trial comparison in the overall analysis. Inter-study heterogeneity was assessed using the Cochran Q statistic and quantified using the I^2 statistic, with $P_Q<0.10$ and $I^2>50\%$ considered to be evidence of substantial heterogeneity. Group differences were tested using subgroup meta-analysis where $p<0.05$ was considered significant.

Supplementary Figure 23. Pooled effect estimates of OBG molecular weight and insulin iAUC.



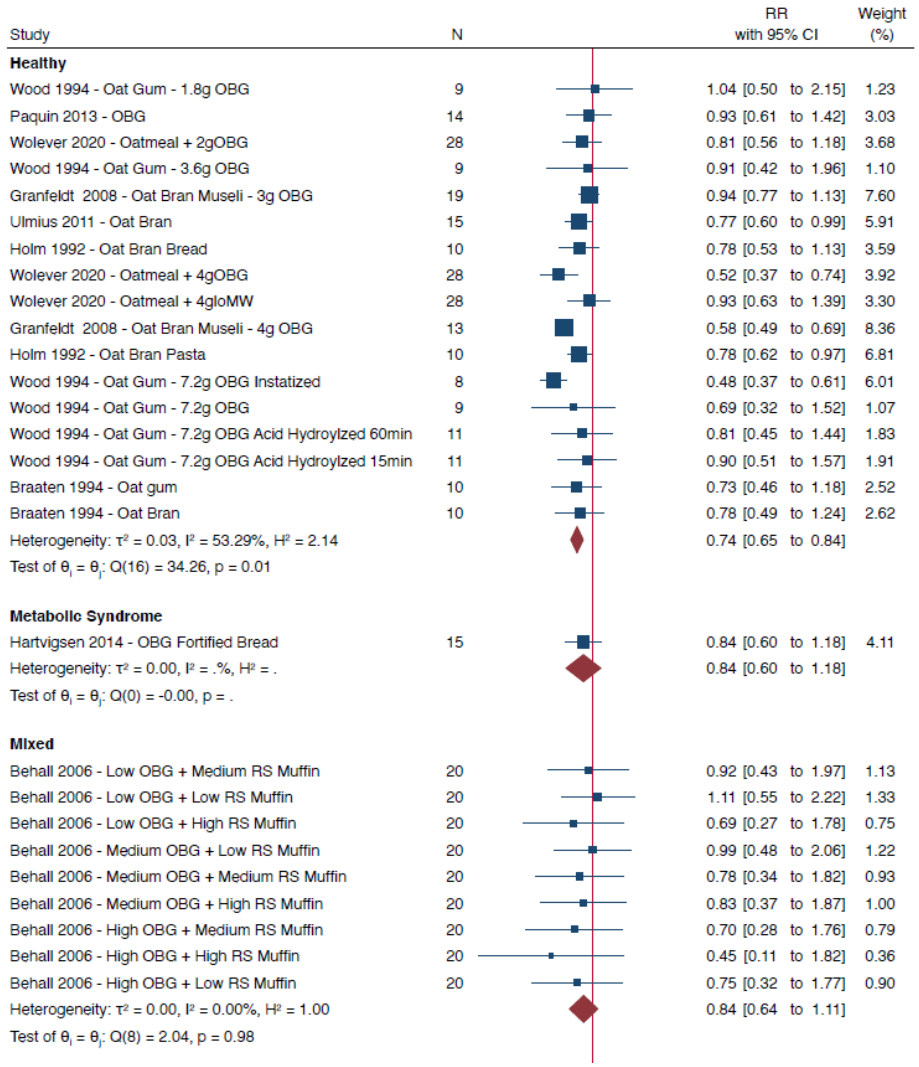
Molecular weight was reported in 12/31 trial comparisons. Data are expressed as ratio of means (RoMs) with 95% CIs using the generic inverse variance method modelled by random effects (DerSimonian-Laird). Trial comparisons within each subgroup are sorted from the lowest to the highest dose of oat β-glucan per 30g available carbohydrate portion The subgroup and total pooled effect estimates are represented by the red and green diamonds, respectively, with the size of the diamond representing the weight of the trial comparison in the overall analysis. Inter-study heterogeneity was assessed using the Cochran Q statistic and quantified using the I^2 statistic, with $P_Q<0.10$ and $I^2>50\%$ considered to be evidence of substantial heterogeneity. Group differences were tested using subgroup meta-analysis where $p<0.05$ was considered significant.

Supplementary Figure 24. Pooled effect estimates of OBG and insulin iAUC by type of comparator.

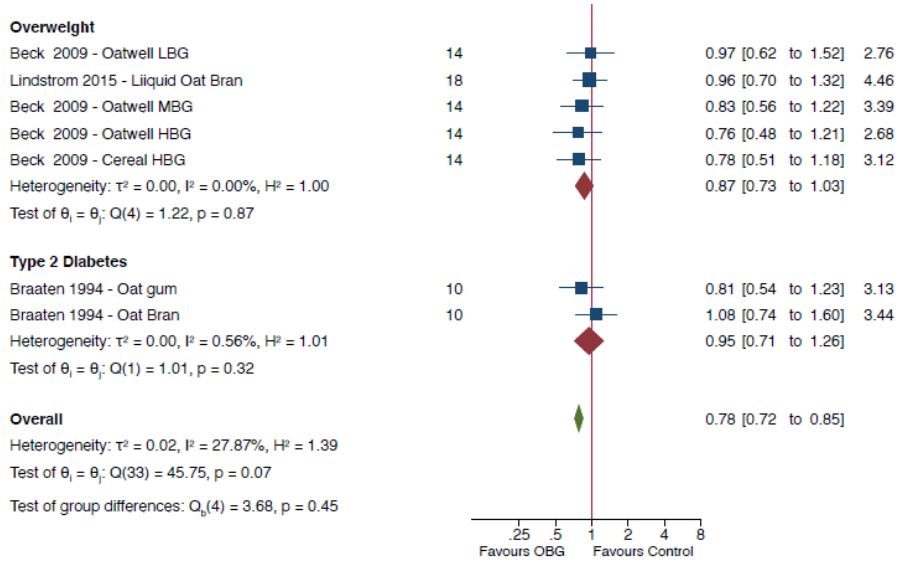


Data are expressed as ratio of means (RoMs) with 95% CIs using the generic inverse variance method modelled by random effects (DerSimonian-Laird). Trial comparisons within each subgroup are sorted from the lowest to the highest dose of oat β-glucan per 30g available carbohydrate portion The subgroup and total pooled effect estimates are represented by the red and green diamonds, respectively, with the size of the diamond representing the weight of the trial comparison in the overall analysis. Inter-study heterogeneity was assessed using the Cochran Q statistic and quantified using the I^2 statistic, with $P_Q<0.10$ and $I^2>50\%$ considered to be evidence of substantial heterogeneity. Group differences were tested using subgroup meta-analysis where $p<0.05$ was considered significant.

Supplementary Figure 25. Pooled effect estimates of OBG and insulin iAUC by health status.

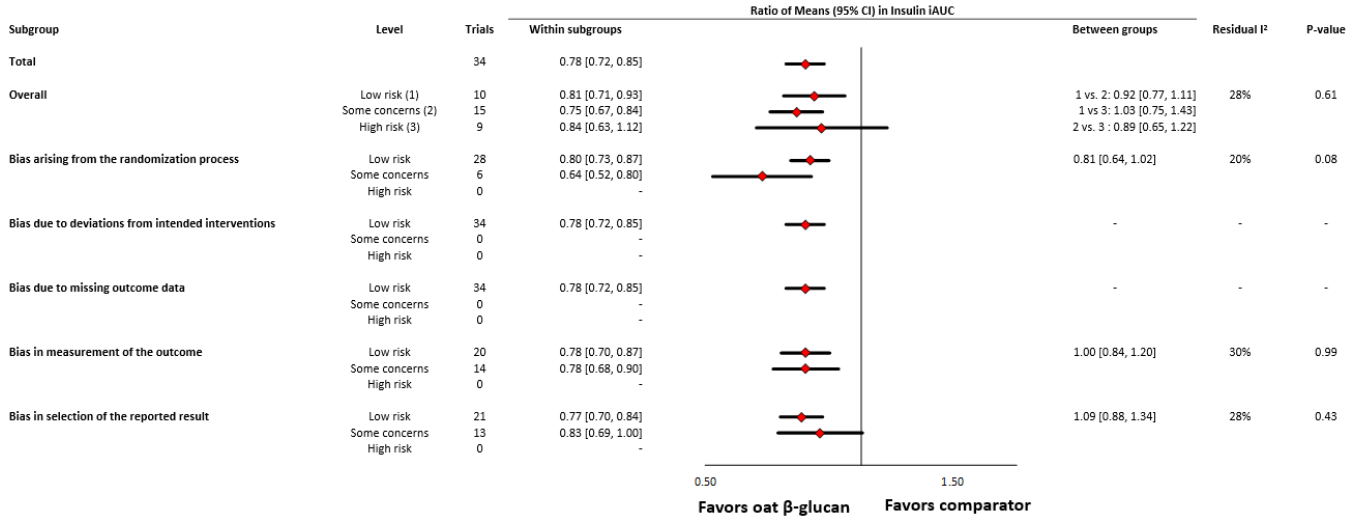


Supplementary Figure 25 *(continued)*



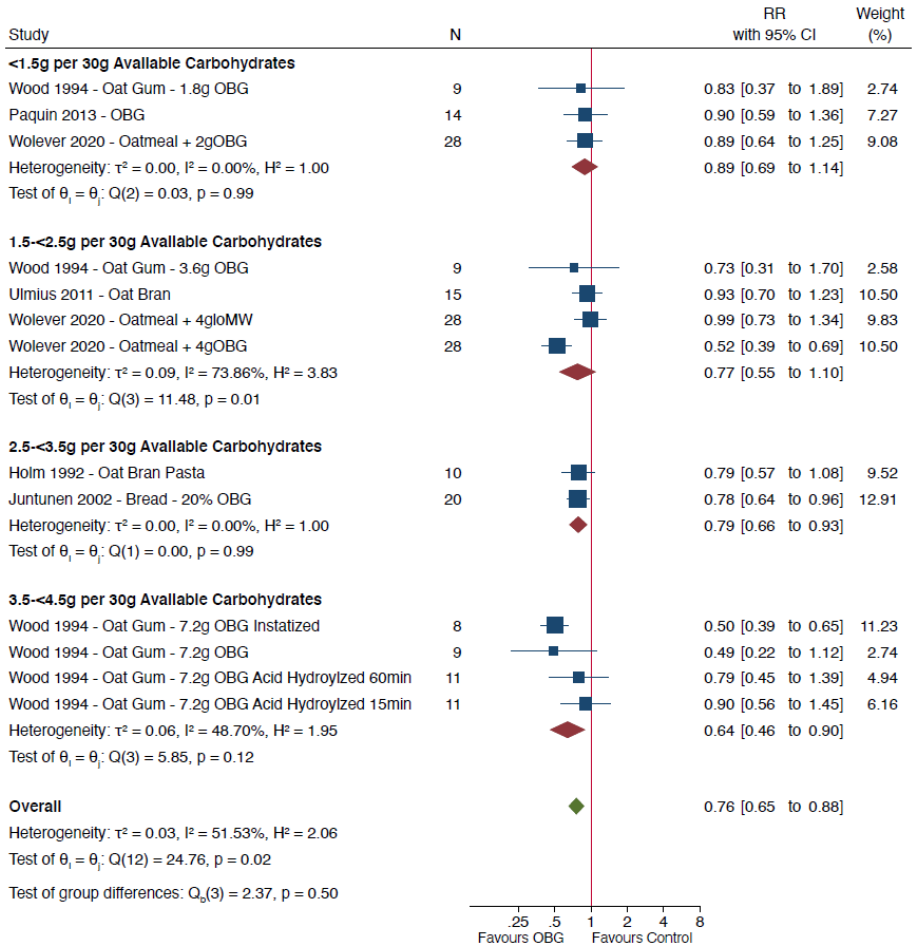
Data are expressed as ratio of means (RoMs) with 95% CIs using the generic inverse variance method modelled by random effects (DerSimonian-Laird). Trial comparisons within each subgroup are sorted from the lowest to the highest dose of oat β-glucan per 30g available carbohydrate portion The subgroup and total pooled effect estimates are represented by the red and green diamonds, respectively, with the size of the diamond representing the weight of the trial comparison in the overall analysis. Inter-study heterogeneity was assessed using the Cochran Q statistic and quantified using the I^2 statistic, with $P_Q<0.10$ and $I^2>50\%$ considered to be evidence of substantial heterogeneity. Group differences were tested using subgroup meta-analysis where $p<0.05$ was considered significant.

Supplementary Figure 26. RoB subgroup analysis of OBG on insulin iAUC



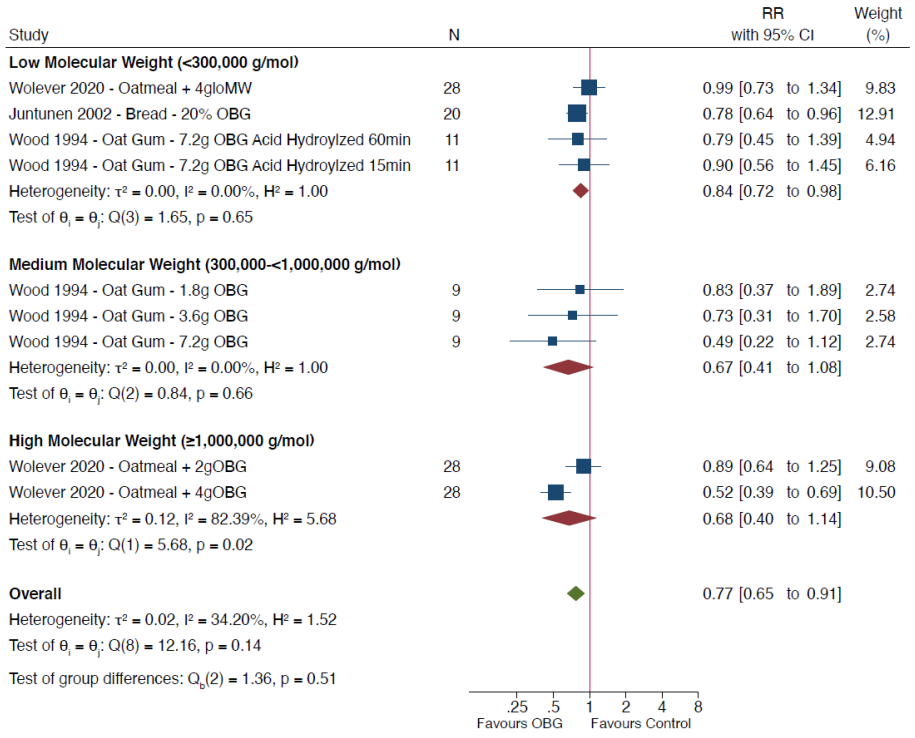
Data are expressed as ratio of means (RoM) with 95% confidence intervals (CIs). Differences between subgroups were tested using meta-regression and the significance level was reported as a p-value, where $p<0.05$ was considered significant. Pooled effect estimates for each subgroup are represented by the diamonds. The dashed line represents the pooled effect estimate for the overall analysis. The residual I^2 value represents remaining between-study variation after adjustment for the subgroup.

Supplementary Figure 27. Pooled effect estimates of OBG dose and insulin iPeak.



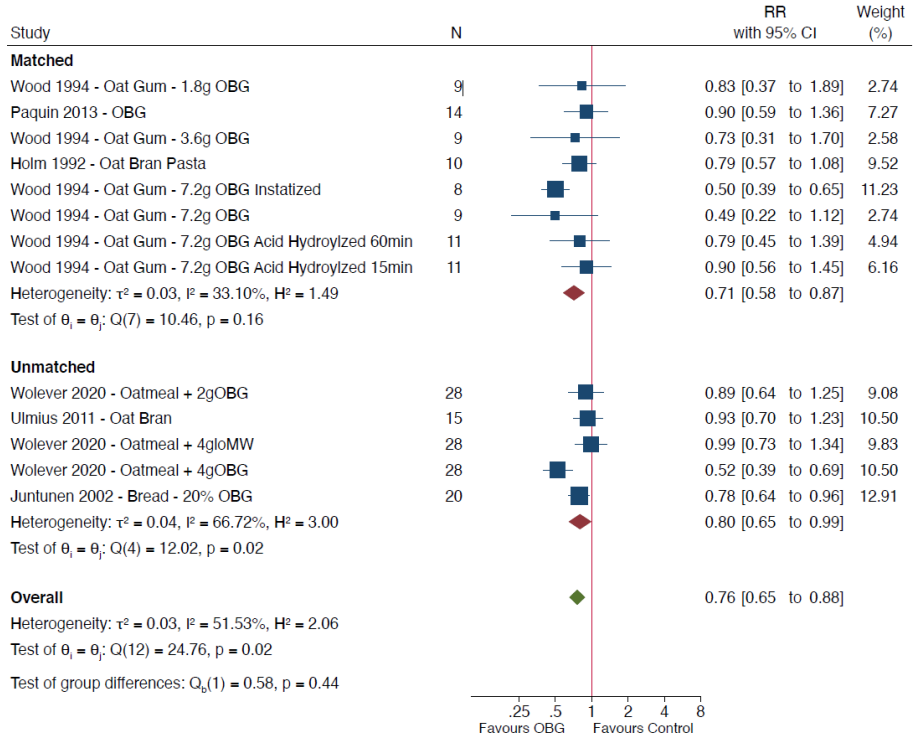
Data are expressed as ratio of means (RoMs) with 95% CIs using the generic inverse variance method modelled by random effects (DerSimonian-Laird). Trial comparisons within each subgroup are sorted from the lowest to the highest dose of oat β-glucan per 30g available carbohydrate portion The subgroup and total pooled effect estimates are represented by the red and green diamonds, respectively, with the size of the diamond representing the weight of the trial comparison in the overall analysis. Inter-study heterogeneity was assessed using the Cochran Q statistic and quantified using the I^2 statistic, with $P_Q<0.10$ and $I^2>50\%$ considered to be evidence of substantial heterogeneity. Group differences were tested using subgroup meta-analysis where $p<0.05$ was considered significant.

Supplementary Figure 28. Pooled effect estimates of OBG molecular weight and insulin iPeak.



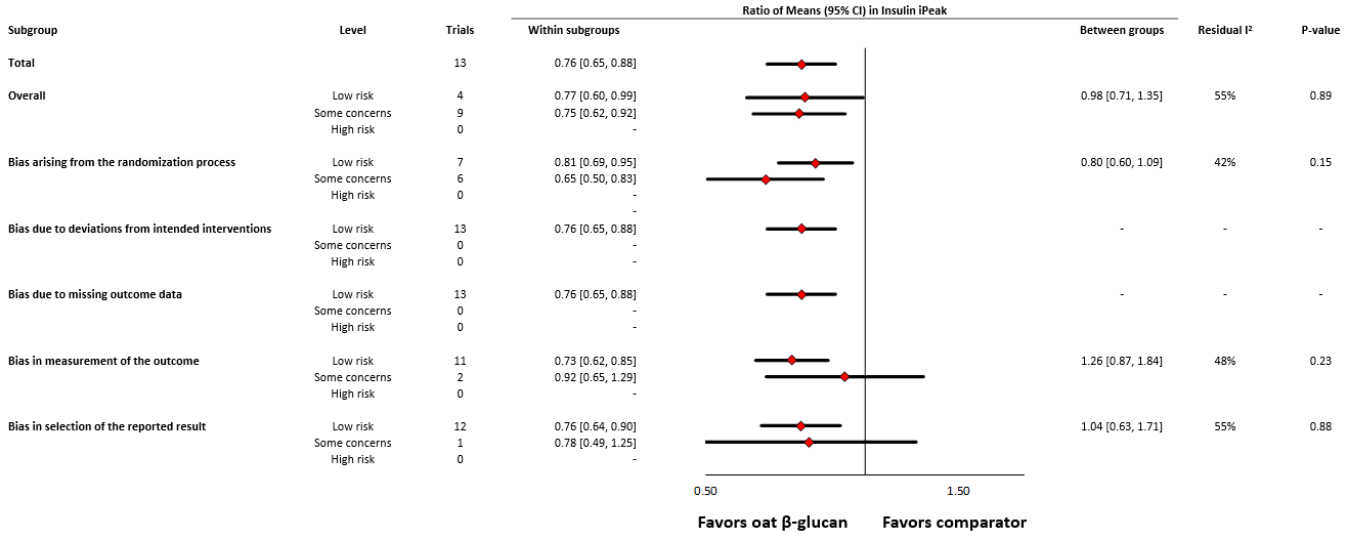
Molecular weight was reported in 6/10 trial comparisons. Data are expressed as ratio of means (RoMs) with 95% CIs using the generic inverse variance method modelled by random effects (DerSimonian-Laird). Trial comparisons within each subgroup are sorted from the lowest to the highest dose of oat β-glucan per 30g available carbohydrate portion The subgroup and total pooled effect estimates are represented by the red and green diamonds, respectively, with the size of the diamond representing the weight of the trial comparison in the overall analysis. Inter-study heterogeneity was assessed using the Cochran Q statistic and quantified using the I^2 statistic, with $P_Q<0.10$ and $I^2>50\%$ considered to be evidence of substantial heterogeneity. Group differences were tested using subgroup meta-analysis where $p<0.05$ was considered significant.

Supplementary Figure 29. Pooled effect estimates of OBG and insulin iPeak by type of comparator.



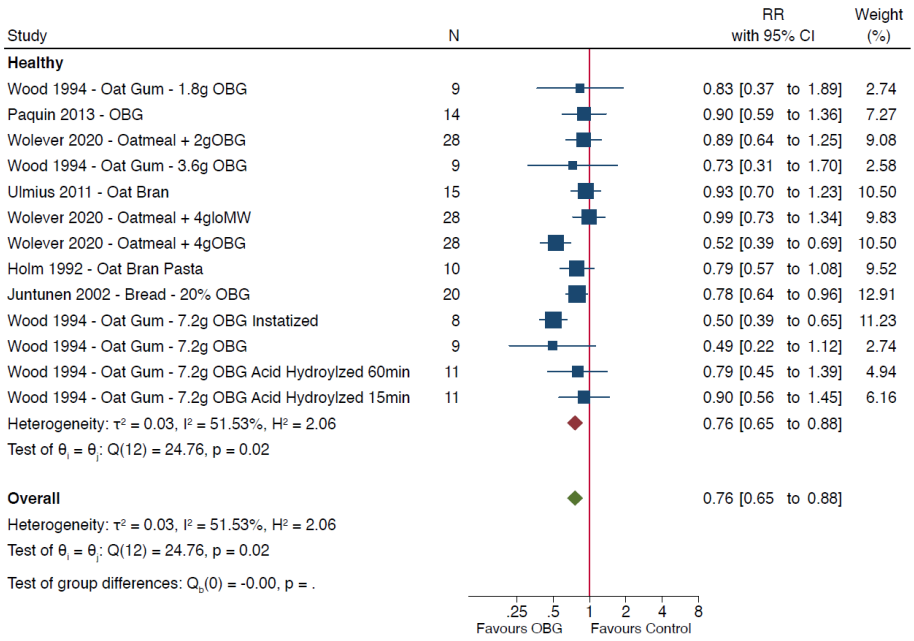
Data are expressed as ratio of means (RoMs) with 95% CIs using the generic inverse variance method modelled by random effects (DerSimonian-Laird). Trial comparisons within each subgroup are sorted from the lowest to the highest dose of oat β-glucan per 30g available carbohydrate portion The subgroup and total pooled effect estimates are represented by the red and green diamonds, respectively, with the size of the diamond representing the weight of the trial comparison in the overall analysis. Inter-study heterogeneity was assessed using the Cochran Q statistic and quantified using the I^2 statistic, with $P_Q<0.10$ and $I^2>50\%$ considered to be evidence of substantial heterogeneity. Group differences were tested using subgroup meta-analysis where $p<0.05$ was considered significant.

Supplementary Figure 30. RoB subgroup analysis of OBG on insulin iPeak



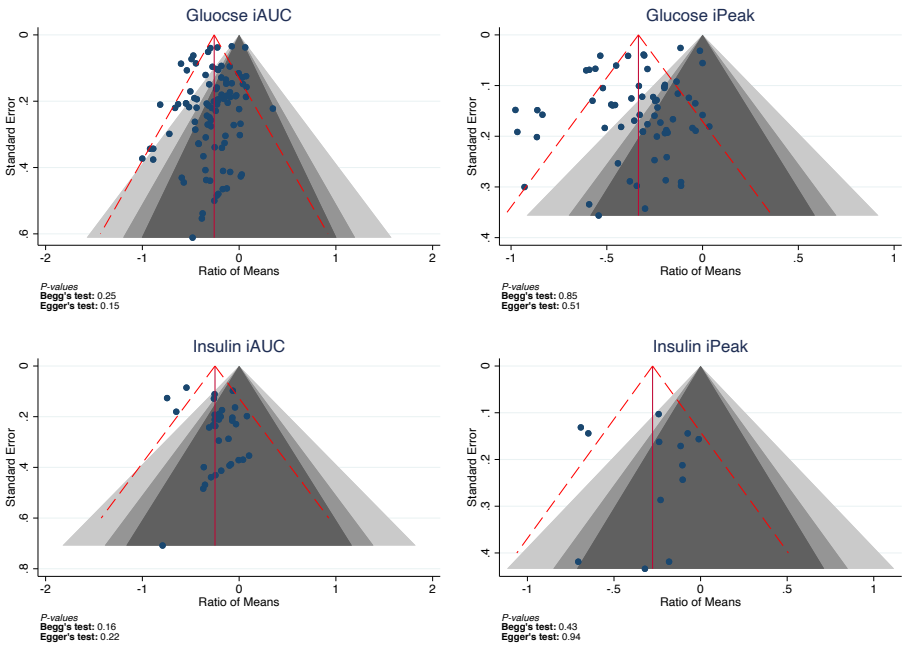
Data are expressed as ratio of means (RoM) with 95% confidence intervals (CIs). Differences between subgroups were tested using meta-regression and the significance level was reported as a p-value, where $p<0.05$ was considered significant. Pooled effect estimates for each subgroup are represented by the diamonds. The dashed line represents the pooled effect estimate for the overall analysis. The residual I^2 value represents remaining between-study variation after adjustment for the subgroup.

Supplementary Figure 31. Pooled effect estimates of OBG and insulin iPeak by health status.



Data are expressed as ratio of means (RoMs) with 95% CIs using the generic inverse variance method modelled by random effects (DerSimonian-Laird). Trial comparisons within each subgroup are sorted from the lowest to the highest dose of oat β-glucan per 30g available carbohydrate portion The subgroup and total pooled effect estimates are represented by the red and green diamonds, respectively, with the size of the diamond representing the weight of the trial comparison in the overall analysis. Inter-study heterogeneity was assessed using the Cochran Q statistic and quantified using the I^2 statistic, with $P_Q<0.10$ and $I^2>50\%$ considered to be evidence of substantial heterogeneity. Group differences were tested using subgroup meta-analysis where $p<0.05$ was considered significant.

Supplementary Figure 32. Contour-enhanced funnel plot for the effect of OBG on the glucose and insulin iAUC and iPeak.



Funnel plot of natural logarithm ratio of means. The dots represent individual trial comparisons. The vertical solid red line represents the poled effect estimate and the dashed red lines represent the pseudo-95% confidence limits. The contour regions define the regions of statistically significant and nonsignificant levels with dark grey representing $p>0.1$, medium grey $p>0.05$ to ≤ 0.1, light grey $p\leq 0.01$ to $p<0.05$ and no shading $p<0.01$. The p-values were derived from quantitative assessment of publication bias by Egger's and Begg's tests set at a significance level of $p<0.05$.

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Supplementary Table 8. GRADE certainty of the evidence assessment

No. of trial comparisons	Study design	GRADE ASSESSMENT					No. of participants	Effect RoM (95% CI)	Certainty
		Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations			
Glucose iAUC									
98	Randomized and non-randomized trials	not serious	not serious[a]	not serious	not serious[b]	Dose-response[c]	508	0.77 (0.74 to 0.81)	⊕⊕⊕⊕ HIGH
Glucose iPeak									
66	Randomized and non-randomized trials	not serious	serious[d]	not serious	not serious	Dose-response[c]	313	0.72 [0.64, 0.76]	⊕⊕⊕⊕ HIGH
Insulin iAUC									
34	Randomized and non-randomized trials	not serious	not serious	not serious	serious[e]	Dose-response[c]	231	0.78 [0.72, 0.85]	⊕⊕⊕⊕ HIGH
Insulin iPeak									
13	Randomized and non-randomized trials	not serious	not serious	not serious	serious[e]	Dose-response[c]	115	0.76 [0.65, 0.88]	⊕⊕⊕⊕ HIGH

GRADE, Grading of Recommendations Assessment, Development, and Evaluation. iAUC, incremental area under the curve; iPeak, incremental peak rise; RoM, ratio of means.

[a]No downgrade as the presence of substantial heterogeneity (I^2 =59.9%) was largely explained by dose (residual I^2=7.2%, P_Q=0.284).

[b]No downgrade for imprecision because while the 95% CI of the pooled effect estimate includes the clinical decision threshold for physiologically relevance (RoM=0.8), subgroup analyses indicated precise pooled effect estimates at doses >3.5g OBG/30g avCHO and from high molecular weight OBG.

[c]Dose response observed based on linear dose response analysis.

[d]Presence of significant heterogeneity (I^2=82.6%) of which the source could not be identified through subgroup or sensitivity analyses.

[e]95% CI includes the clinical decision threshold for physiologically relevance (RoM=0.8)