

SUPPLEMENTARY DATA

Full electronic search strategy

The PubMed search syntax served as the basis for all search strategies, using both Medical Subject Headings (MeSH) and text terms with Boolean operators. The syntax consisted of three search themes intersected by the Boolean term “AND”. MESH terms included terms related to glucose-dependent insulinotropic polypeptide (“Glucose-dependent insulinotropic polypeptide”, “Incretins”, “Gastric inhibitory peptide”, “Diabetes Mellitus”) and intervention-related terms (“Glucose tolerance test”).

The first theme, glucose-dependent insulinotropic polypeptide, combined exploded versions of Medical Subject Headings (MeSH) “Glucose-dependent insulinotropic polypeptide” or “Incretins” or “Gastric inhibitory peptide” or “Diabetes Mellitus” or text terms *GIP* or *diabetes* or *diabetic patients* or *incretin* or *gut hormones*.

The second theme, intervention, combined exploded versions of MeSH terms “Glucose tolerance test” or text terms *OGTT* or *mixed meal test* or *load* or *stimulus* or *secretion* or *response* or *nutrients*.

For the third theme, because we focused on controlled studies, we excluded other design types using the Cochrane Highly Sensitive Search Strategy for identifying trials in MEDLINE, sensitivity-maximizing version: *controlled clinical trial[pt]* or *trial[tiab]* or *groups[tiab]*. The strategy to remove articles dealing only with animals was NOT (animals[mh] NOT humans[mh]). The search strategy was then adapted for Cochrane Library, Embase, and Web of Science.

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Supplementary Table 1. Characteristics of the trials

Trial (year of publication) (reference)	Patients with type 2 diabetes (n=363)	Non-diabetic control subjects (n=325)	Type of test(s)	Duration of test (hours)
Alam et al (1992) (1)	13	18	75g-OGTT	2
Bagger et al (2011) (2)	8	8	25g-OGTT	4
			75g-OGTT	
			125g-OGTT	
Bose et al (2009) (3)	11	8	50g-OGTT	3
Brown et al (2012) (4)	10	25	75g-OGTT	3
Han et al (2010) (5)	20	20	556 kcal-meal ^a	3
Højberg et al (2008) (6)	9	9	537 kcal-meal ^a	4
Jones et al (1989) (7)	68	31	75g-OGTT	4
			500 kcal- meal ^a	
Knop et al (2007) (8)	8	8	50g-OGTT	4
Knop et al (2007) (9)	10	10	50g-OGTT	4
Laferrère et al (2007) (10)	8	7	50g-OGTT	3
Meneilly et al (2000) (11)	12	9	40g/m ² -OGTT	3
Rijkelijkhuisen et al (2009) (12)	18	6	460 kcal-meal ^a	2
			680 kcal-meal ^a	
			833 kcal-meal ^a	
Romero et al (2012) (13)	5	5	398 kcal-meal ^b	2
Ryskjær et al (2006) (14)	8	8	652 kcal-meal ^a	3
Salinari et al (2009) (15)	9	6	75g-OGTT	4
Skrha et al (2010) (16)	17	17	442 kcal- meal ^a	1.5
Solomon et al (2010) (17)	13	16	75g-OGTT	2
Theodorakis et al (2006) (18)	17	36	75g-OGTT	2
Toft-Nielsen et al (2001) (19)	54	33	537 kcal-meal ^a	4
Vaag et al (1996) (20)	12	13	75g-OGTT	3
Vilsbøll et al (2001) (21)	12	12	566 kcal-meal ^a	3
Vilsbøll et al (2003) (22)	8	8	260 kcal-meal ^a	3
			520 kcal-meal ^a	

^aSolid mixed meal test, ^bLiquid mixed meal test. OGTT, oral glucose tolerance test.

Supplementary Table 2. Random effects meta-regression

	Peak (pmol/l)	tAUC (pmol/l×time)	iAUC (pmol/l×time)	iAUC×min ⁻¹ (pmol/l)
Age	P=0.03	P=0.02	P=0.005	P=0.001
BMI		P=0.003	P=0.006	P=0.003
HbA1c			P=0.007	P=0.002

Random effects meta-regression of the primary meta-analysis evaluating glucose-dependent insulinotropic polypeptide outcomes. HbA1c, hemoglobin A1c. tAUC, total area under the curve. iAUC, incremental area under the curve. iAUC×min⁻¹, time-corrected (for duration of test) iAUC.

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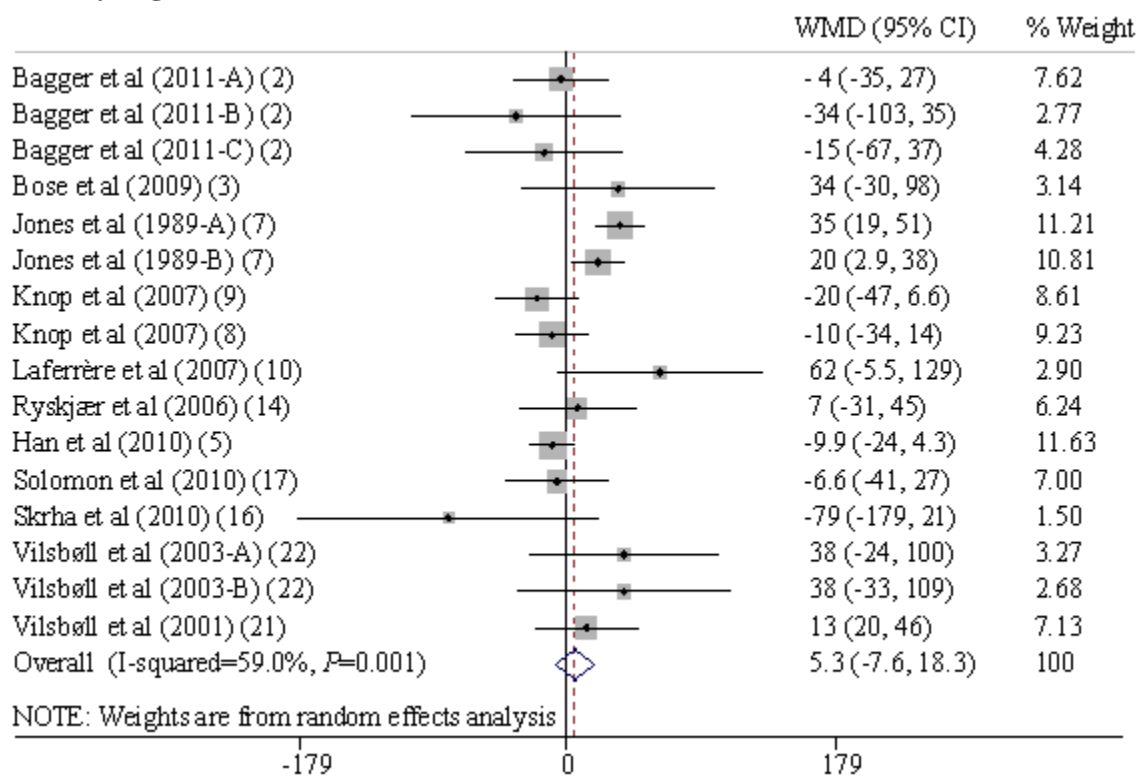
Supplementary Table 3. Analysis of outdated assays

	Fasting levels (pmol/l)	Peak (pmol/l)	iAUC (pmol/l×time)	iAUC×min ⁻¹ (pmol/l)
Random effect models	17.2 [6.9, 27.6]	55.4 [8, 103]	169 [-186, 525]	1.6 [-2.8, 6]
Fixed effects models	16.8 [10, 23.6]	48.5 [27.5, 69.5]	204 [66, 342]	2.4 [0.7, 4.1]

Data are expressed as weighted mean difference (WMD) with 95% confidence interval in parentheses. Negative WMD values represent lower glucose-dependent insulinotropic peptide responses and positive values reflect greater responses in patients with type 2 diabetes compared with non-diabetic control subjects. iAUC, incremental area under the curve. iAUC×min⁻¹, time-corrected (for duration of test) iAUC.

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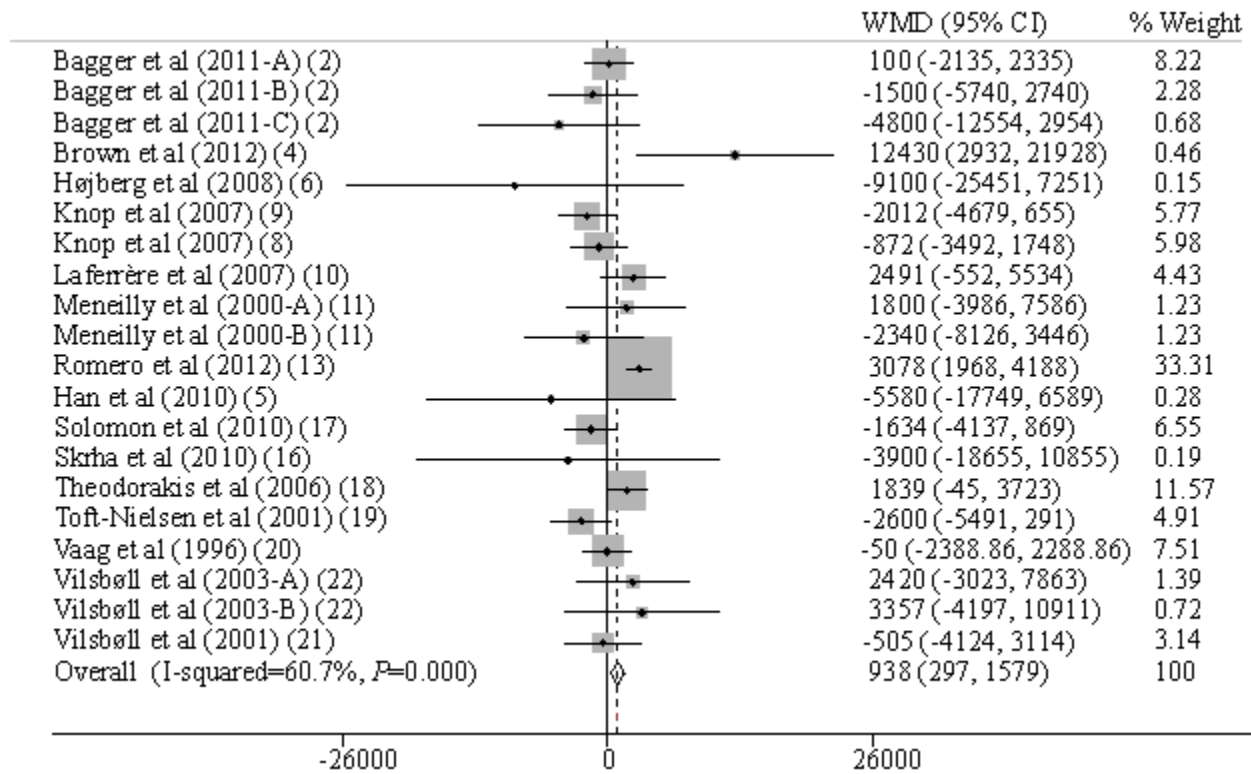
Supplementary Figure 1. Peak GIP



Meta-analysis of plasma total glucose-dependent insulinotropic polypeptide (GIP) responses during an oral glucose tolerance test (OGTT) or meal test evaluated from plasma peak levels using random effects model. WMD: weighted mean difference. Capital letters indicate different GIP secretory stimuli in the same study.

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Supplementary Figure 2. Total area under the curve for GIP



Meta-analysis of plasma total glucose-dependent insulintropic polypeptide (GIP) responses during an oral glucose tolerance test (OGTT) or meal test evaluated from total area under the curve (tAUC) (pmol/l×min) using fixed effects model. WMD: weighted mean difference. Capital letters indicate different GIP secretory stimuli in the same study.

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