IMPACT OF SUSTAINED MORNING FASTING ON PLASMA LEVELS OF ACYLATED GHRELIN IN ADULTS WITH OBESITY

Enhad A. Chowdhury, Judith D. Richardson, Javier T. Gonzalez, Kostas Tsintzas, Dylan Thompson, James A. Betts, *Department for Health, University of Bath, Bath, UK*

CONTEXT

Breakfast consumption is often associated with **positive effects** on weight management in public opinion. Currently, the evidence regarding the positive impact of breakfast consumption versus morning fasting is mixed.

Little is known regarding the effects of breakfast consumption on metabolic responses to morning feeding and acute appetite in individuals with obesity. A previous study observed that there were no causal effects of breakfast consumption on **acute hormonal or metabolic responses** to feeding in lean individuals **[1]**. But individuals with obesity have been shown to have different responses to feeding, such as delayed satiation and limited **ghrelin** suppression of **ghrelin** with feeding. The objective of this clinical study is to evaluate the impact of sustained morning fasting on energy intake, metabolism, and appetite in healthy adults with obesity.

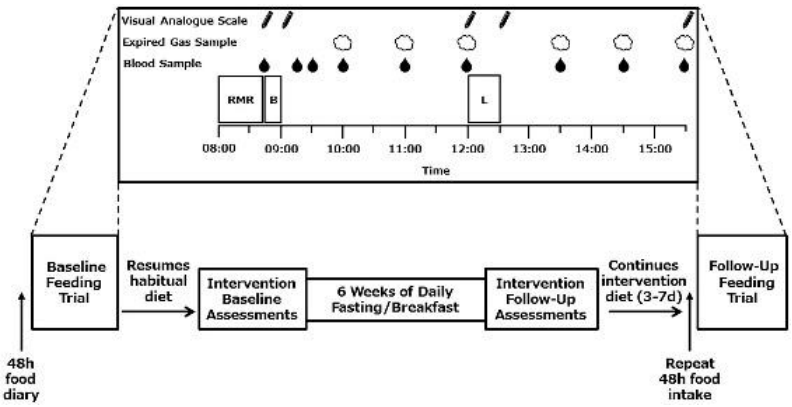
MATERIALS

- For analysis of **acylated ghrelin**, 1mL of whole blood was dispensed into a tube coated with EDTA, which had 50 µl of a **p-hydroxymercuribenzoic acid solution** (PHMB, prepared as a 100 mm concentrate solution in potassium phosphate buffer containing 1·2 % 10 m-NaOH). Samples were then centrifuged and 500 µl of supernatant transferred to an untreated blood tube containing 10 µl 1 m-HCl. Samples were centrifuged again and the supernatants stored at − 80°C for subsequent analysis.
- Plasma samples were analysed to determine levels of **acylated ghrelin** (intra-assay CV: 4.2%; **cat# A05306**, **Bertin Bioreagent**, France), total **ghrelin** (intra-assay CV: 4.0%), peptide YY (PYY) (intra-assay CV: 4.3%). Leptin (intra-assay CV: 3.4%) and insulin (intra-assay CV: 4.7%) assays were conducted using serum.
- **Nonesterified fatty acids** (intra-assay CV: < 5 %), glucose (intra-assay CV: < 5 %), and urea (intra-assay CV: < 5 %) were measured with a Daytona automated analyzer using plasma samples .

CONTACT
bioreagent@bertin.group
www.bertin-bioreagent.com

IMPACT OF SUSTAINED MORNING FASTING ON PLASMA LEVELS OF ACYLATED GHRELIN IN ADULTS WITH OBESITY

STUDY DESIGN



Included 22 adults, 25–58 years old, 14 females and 8 males

- BMI ≥ 30 kg/m²
- Dual-energy x-ray–derived fat mass indices of ≥9 kg/m2 (men) and ≥13 kg/m2 (women)
- Weight-stable, free of metabolic disorders.
- **2 groups: Breakfast group (*n*=7), Fasting group (*n*=7)**

- Weight & height measurements
- Appetite sensations
- Expired gas samples and urine samples
- Energy intake
- Blood sample

RESULTS

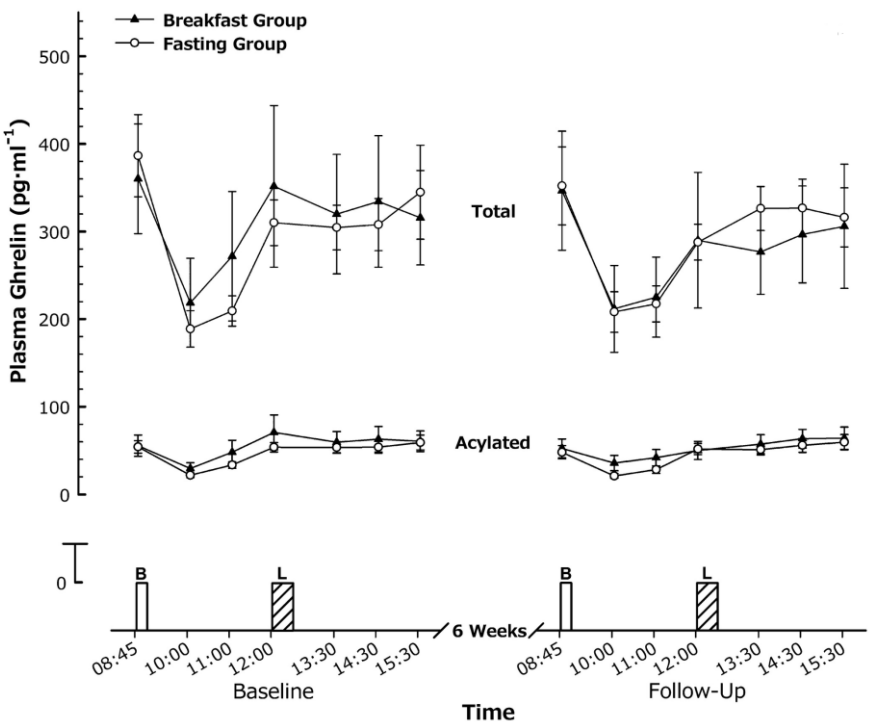


Figure 2: Plasma total and acylated ghrelin, responses to feeding in men and women with obesity before and after a 6-week intervention. Values are mean ± SEM. B, breakfast; L, ad libitum lunch. From **[2]**

bertin bioreagent

CONTACT
bioreagent@bertin.group
www.bertin-bioreagent.com

IMPACT OF SUSTAINED MORNING FASTING ON PLASMA LEVELS OF ACYLATED GHRELIN IN ADULTS WITH OBESITY

CONCLUSION

Overall, the findings suggest that sustained morning fasting does not causally affect hormones regulating appetite, such as **plasma ghrelin** (total and acylated), serum leptin, and serum adiponectin, in **healthy adults with obesity**. Additional measures, including metabolic outcomes (nonesterified fatty acid, insulin, glucose) and energy expenditure indicate that there is little evidence of positive consequences resulting from breakfast consumption. The **Acylated Ghrelin human Easy Sampling ELISA kit** from **Bertin Bioreagent** allows accurate measurements of **acylated ghrelin** levels in blood samples.

UNIVERSITY OF BATH

1. Chowdhury, Enhad A., et al. "Postprandial metabolism and appetite do not differ between lean adults that eat breakfast or morning fast for 6 weeks." The Journal of nutrition 148.1 (2018): 13-21.
2. Chowdhury, Enhad A., et al. "Six weeks of morning fasting causes little adaptation of metabolic or appetite responses to feeding in adults with obesity." Obesity 27.5 (2019): 813-821.

DISCOVER OUR COMPREHENSIVE RANGE OF SOLUTIONS

Join the Bertin Technologies community!

1500+ documents available online on the Application center

www.bertin-technologies.com/application-center/