**Supplementary information**

**Eligibility criteria**

Participants fulfilling all of the following inclusion criteria were eligible for the study:

1. informed consent as documented by signature
2. age between 18 years and 75 years
3. BMI ≥ 30 kg/m2 and < 45 kg/m2
4. stable body weight (<5% reported change during the previous 3 months)
5. right-handed
6. currently non-smoker (or consuming less than 5 cigarettes per day)

The presence of any one of the following exclusion criteria led to exclusion from the study:

1. Contraindications to Saxenda®, e.g. known hypersensitivity or allergy to Saxenda®,
2. Pregnancy,
3. Renal failure (GFR<30 ml/min)
4. Liver failure (AST>3N and/or ALT>3N)
5. Drugs (e.g., Orlistat, phentermine and topiramate, buproprion and naltrexone taken for the underlying condition, obesity, and any centrally acting medication, glucocorticoides and insulin), were not permitted during the study,
6. Known or suspected non-compliance, drug or alcohol abuse,
7. Inability to follow the procedures of the study (e.g. due to language problems, psychological disorders, dementia),
8. Participation in another study with investigational drug within the 30 days preceding and during the present study,
9. Previous enrolment into the current study,
10. Enrolment of the investigator, his/her family members, employees and other dependent persons,
11. History of any psychiatric diseases, heart failure (NYHA II-IV), type 1 and type 2 diabetes mellitus,
12. History of pancreatitis,
13. Family or personal history of multiple endocrine neoplasia type 2 or familial medullary thyroid carcinoma,
14. Allergies to chocolate, vanilia or strawberry,
15. Deficits of smell and taste,
16. Contraindications for fMRI (e.g. pacemaker or other implanted devices, claustrophobia).

Diagram

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Figure 1. Study flow diagram.

**Table 1: Baseline characteristics of the study population**

|  |  |  |  |
| --- | --- | --- | --- |
|  | Placebo average (SD)/N (%) | Liraglutide average (SD)/N (%) | Test |
| BMI (kg/m2) | 34.88 (2.87) | 35.89 (3.01) | t(df=41) = -1.12, p = .268, d = 0.34 |
| Age (years) | 40.04 (14.10) | 37.40 (11.18) | t(df=41) = 0.67, p = .504, d = 0.21 |
| Body weight (kg) | 101.70 (9.77) | 102.30 (16.96) | t(df=41) = -0.15, p = .885, d = 0.04 |
| Waist circumference (cm) | 109.57 (9.67) | 110.00 (12.32) | t(df=41) = -0.13, p = .898, d = 0.04 |
| Gender | Chi-square = 0.11, df = 1, p = .739, Phi = 0.05 | | |
| Female (N) | 8 | 6 |  |
| Male | 15 | 14 |  |

**Table 2: Self-reported levels of hunger, as well as pleasantness, intensity and familiarity ratings for the selected tasteless solution and the milkshake at pretest**

|  |  |  |  |
| --- | --- | --- | --- |
|  | Liraglutide M (SD) | Placebo M (SD) | Test |
| Hunger level | 2.38 (2.93) | 1.92 (2.17) | t(df=38) = -0.57, p = 0.571 |
| Pleasantness (tasteless) | 5.00 (2.22) | 5.19 (1.69) | t(df=38) = 0.30, p = 0.764 |
| Intensity (tasteless) | 1.88 (2.29) | 2.67 (1.89) | t(df=38) = 1.19, p = 0.242 |
| Familiarity (tasteless) | 5.31 (3.46) | 5.30 (3.20) | t(df=38) = -0.22, p = 0.825 |
| Pleasantness (milkshake) | 7.95 (1.90) | 6.62 (2.97) | t(df=37) = -1.65, p = 0.107 |
| Intensity (milkshake) | 7.36 (1.88) | 7.07 (2.27) | t(df=37) = -0.44, p = 0.666 |
| Familiarity (milkshake) | 8.42 (1.93) | 7.30 (2.78) | t(df=37) = -1.46, p = 0.149 |

**Table 3: Change in secondary end points from baseline to 16-week follow-up**

**Table

Description automatically generated**