Table S1. Control and high-fat diets composition.

| | CO group | | OB group | |
|---|---|---|---|---|
| | g/Kg | g/500 kcal | g/Kg | g/500 kcal |
| Corn starch | 529.486 | 67.81 | 121.667 | 11.69 |
| Casein | 200 | 25.64 | 264 | 25.38 |
| Sucrose | 100 | 12.82 | 132 | 12.69 |
| Soy oil | 70 | 8.97 | 92 | 8.84 |
| Lard | - | - | 257 | 24.71 |
| Fiber | 50 | 6.41 | 66 | 6.34 |
| Mineral mix | 35 | 4.487 | 46 | 4.42 |
| Mix of vitamins | 10 | 1.282 | 13 | 1.25 |
| L-cystine | 3 | 0.38 | 4 | 0.38 |
| Choline bitartrate | 2.5 | 0.32 | 3.3 | 0.32 |
| Tert-Butylhydroquinone | 0.014 | 0.0018 | 0.037 | 0.0035 |
| Total | 1000 | 128.12 | 1000 | 96.02 |

Control diet (AIN-93G) containing 3.9 kcal/g and hyperlipidic lard-based diet containing 5.2 kcal/g. *For detailed mineral mix composition, please see Reeves et al. (1993) [19]. **The OBSe group received the high fat diet and supplementation with Se (0.45 ppm) as sodium selenate diluted in water.
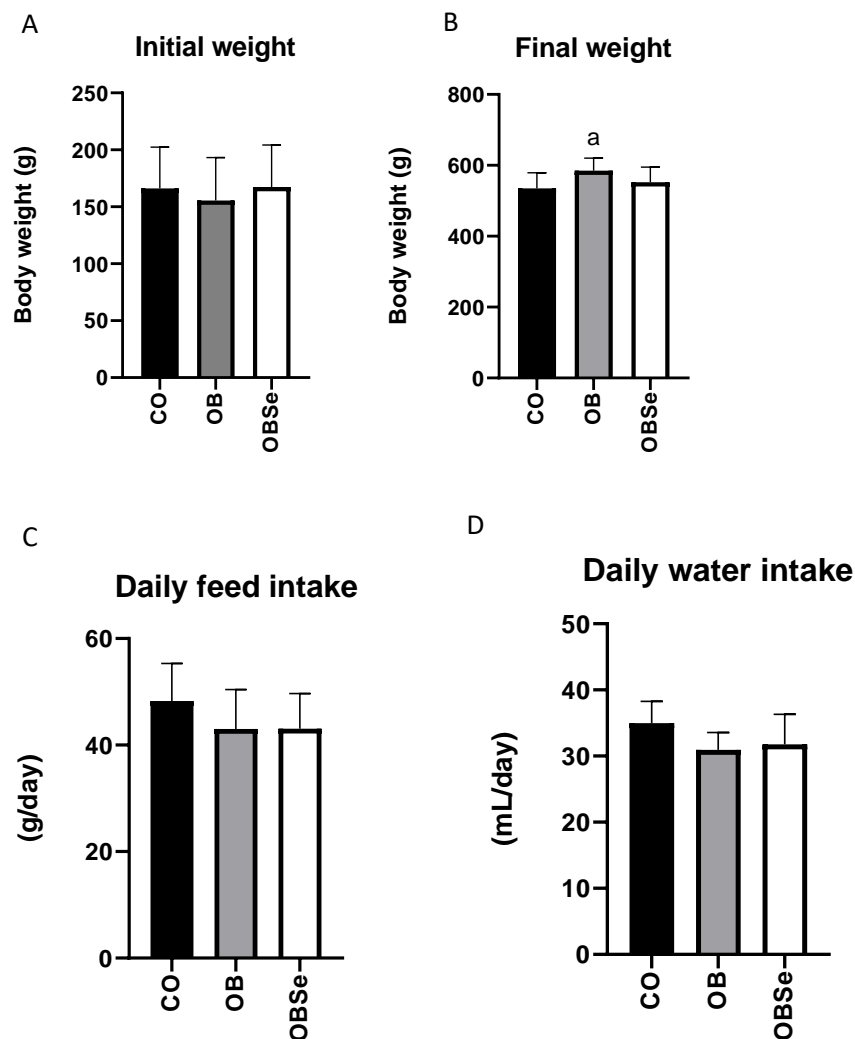
Figure S1. Initial (a) and final (b) body weight and daily feed (c) and water (d) intake. Data represent the mean ± SEM (n = 15/group). *Statistically significant difference (p≤0.05) compared to CO group according to one-way ANOVA, followed by Tukey's multiple comparisons test.

Table S2. Primer sequences used in real-time PCR for mRNA expression analysis.

| Gene | Primer sequence (5′–3′) |
|---|---|
| B actin (Control) | F:GACAACGGCTCCGGCATGTGCAAAG<br><br>R: TTCACGGTTGGC CTTAGGGTTCAG |
| PPARγ | F: CTGGCCTCCCTGATGAATAAAG<br><br>R: AGGCTCCATAAAGTCACCAAAG |
| IL-6 | F: GTGGAAGACAAACCATGTTGCCGT<br><br>R:TATTGCAGGTGAGCTGGACGTTCT |
| TNFα | F:AGAACAGCAACTCCAGAACACCCT<br><br>R:TGCCAGTTCCACATCTCGGATCAT |
| Adiponectin | F:GCGCTCCTGTTCCTCTTAAT<br><br>R:CATCCAACCTGCACAAGTTTC |
| C/EBPβ | F: GACTACGCAACACACGTGTAACT<br><br>R: CAAAACCAAAAACATCAACAACCC |
| C/EBPα | F: TTACAACAGGCCAGGTTTCC<br><br>R: GGCTG GCGACATACAGATCA |
| CYP1A1 | F: CCATGACCAGGAACTATGGG<br><br>R: TCTGGTGAGCATCCAGGACA |
| DNMT3A | F: ACGCCAAAGAAGTGTCTGCT<br><br>R: CTTGGCTATTCTGCCGTGTT |
| DNMT1 | F: GGTTCTGCGCGGGGACAGAC<br><br>R: CCGGCAACATGGCCTCAGGG |
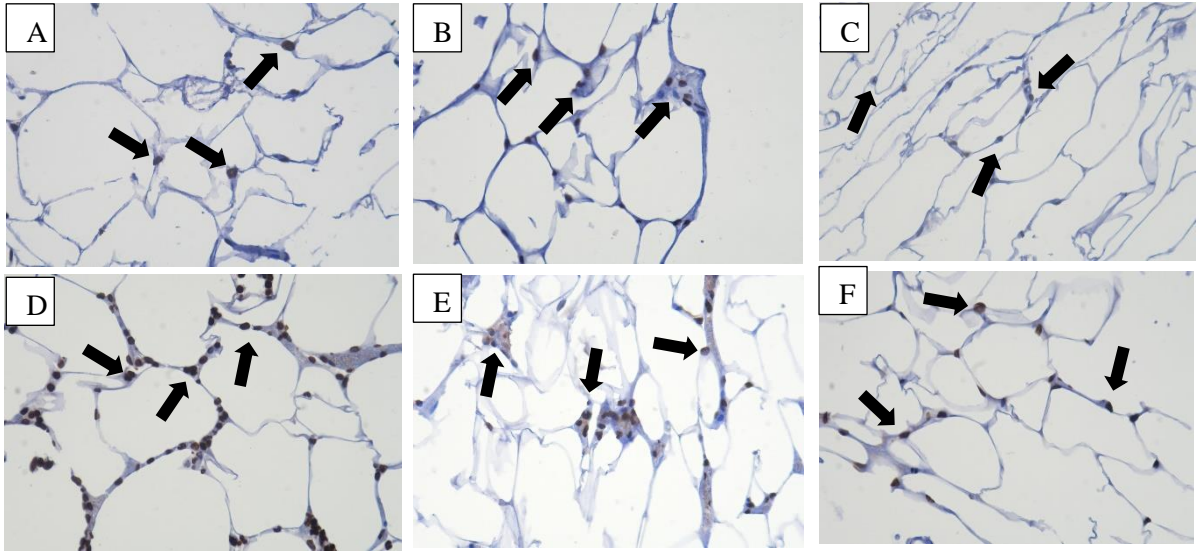
Figure S2. Representative photomicrographs of epididymal adipose tissue sections stained with hematoxylin-eosin and marked with H3k4me3 antibody [(A) CO group, (B) OB group, and (C) OBSe]; or with H4k16ac antibody [(D) CO group, (E) OB group, and (F) OBSe]. All images are at 10x. No statistically significant difference ($p \leq 0.05$) among groups according to one-way ANOVA, followed by Tukey's multiple comparisons test.

Table S3. Taqman assays used for the analysis of miRNA expression by qPCR (Thermo Fisher Scientific, USA)

| miRNA | Assay ID |
|---|---:|
| hsa-miR-200c-3p | 002300 |
| hsa-miR-497-3p | 002368 |
| Hsa-miR-15b | 000390 |
| RNU49 | 000209 |