**Supplemental Table 1: Detailed composition of the NCD and HFD**

|  |  |  |
| --- | --- | --- |
|  | **NCDA** |  **HFD**B |
|  **Physiological fuel value**C  | **kcal/g** | **kcal/g** |
|  | 2.89 | 4.80 |
|  **Macronutrients**C | **% kcal** | **% kcal** |
|  Protein | 21.4 | 19 |
|  Fat | 13 | 61.8 |
|  Carbohydrates | 65.6 | 19.2 |
|  **Approximate fat content** | **% of total fatD** | **% of total fatE** |
|  Saturated fat | 30 | 32 |
|  Monounsaturated fat | 38.5 | 36 |
|  Polyunsaturated fat  | 31.5 | 32 |
|  **Ingredients** | **Representative ingredients****(or g% when available)** | **g%** |
|  Lard | - | 31.7 |
|  Casein | - | 25.8 |
|  Maltodextrin | - | 16.2 |
|  Sucrose  | - | 9.9 |
|  Fibers (digestible + non-digestible)  | 20.7 | 6.4 |
|  Soybean oil | - | 3.2 |
|  Potassium citrate | - | 2.1 |
| Dicalcium phosphate, 1 H2O | Yes | 1.7 |
|  Mineral mix | Yes | 1.3 |
|  Vitamin mix | Yes | 1.3 |
| Calcium carbonate | Yes | 0.7 |
| L-Cystine | 0.3 | 0.4 |
| Choline bitartrate |  | 0.3 |
| Corn | Yes | - |
| Wheat middlings | Yes | - |
| Wheat | Yes | -  |
| Dehulled soybean meal | Yes | - |
| Fish meal | Yes | - |
| Poultry fat | Yes | - |
| Whey | Yes | - |
| Salt | Yes | - |
| Amino acids  | Yes | - |

A Nutrient composition of the standard chow diet (Charles River Rodent Diet # 5075, Cargill Animal Nutrition, Minnetonka, MN). B Commercial HFD diet (D12492 diet, Research Diets Inc., USA) prepared using purified food-grade elements. C Physiological fuel value (kcal/g) calculated using modified Atwater factors (3.5kcal to protein, 8.5kcal/g to fat and 3.5kcal/g to carbohydrate.) for both diets. D Percent saturated and unsaturated (monounsaturated and polyunsaturated) fat values as previously described by Ysari *et al*., Mol Cell Biochem 335:291-9. E Percent saturated and unsaturated fat values as previously described by Guyenet SJ *et al.,* Brain research 1512:97-105.

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**Supplemental Table 2: Primer Sequence Used for RT-qPCR Amplification**

|  |  |  |  |
| --- | --- | --- | --- |
| *Target gene* | *Organism* | *Forward primer 5’-----------˃ 3’**Reverse primer 5’-----------˃ 3’* | *Accession number* |
| *UCP3* | Rat | AAAGACCCGATACATGAACGCTAAGGAGGGCATGAATCCTTTGT | NM\_013167.2 |
| *CPT1B* | Rat | TGGGCAACCAACTATGTAAGTGATGCTTGTTGGCTCGTGTTCTTA | NM\_013200.1 |
| CPT2 | Rat | GATTATCTGCAGCACAGCATCGCTTCTGTTCTCCTGAACTGGCT | NM\_012930.1 |
| Dnm1l | Rat | TAATAAGGGAGTAAGCCCTGAGCAAGCTCAATATCCTTGGGCTGA | NM\_053655.3 |
| Fis1 | Rat | ACAATGACGACATCCGTAGAGGGCCTTTTCATATTCCTTGAGCCG | NM\_001105919.1 |
| Mfn1 | Rat | CTCGGAATCAACGCTGATGAACTGCGCACATCCTCCATATATTCT | NM\_138976.1 |
| Mfn2 | Rat | TATAAGAATGAACTGCACCGCCACACAGGAAGAAGGGGCTTCAA | NM\_130894.4  |
| Opa1 | Rat | GAGGATCCGGTGAGATGATGACCTGCAAGATCTTCCTCCTTGGT | NM\_133585.3  |
| Tfam | Rat | GCTAAACACCCAGATGCAAAAGT GCTCACAGCTTCTTTGTACACC | NM\_031326.1 |
| Mn SOD | Rat | TGGCTTCAATAAGGAGCAAGGTAATCCCCAGCAGTGGAATAAGG | NM\_017051.2  |