**Table S5.** Key DEGs selected in lipid and energy metabolism for three comparison groups. Three comparison group included LS vs. Con, LT vs. Con, LT vs. LS.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Comparison group** | **Gene** | **Description** | **log2FC** | ***P*adj** | **regulated** | **ko ID** |
| LS vs. Con | *HSD17B12* | *17beta-estradiol 17-dehydrogenase* | 7.317 | 0.033 | up | ko00062, ko1040 |
|  | *TGL* | *Triacylglycerol lipase* | -5.881 | 0.029 | down | ko00561 |
|  | *AGPAT* | *1-acyl-sn-glycerol-3-phosphate acyltransferase* | 7.098 | 0.048 | up | ko00561 |
|  | *FBA* | *fructose-bisphosphate aldolase* | 8.807 | 0.002 | up | ko00010 |
|  | *PCK* | *phosphoenolpyruvate carboxykinase* | 7.792 | 0.018 | up | ko00010, ko00020 |
| LT vs. Con | *FAS* | *fatty acid synthase* | -5.472 | <0.001 | down | ko00061 |
|  | *FabD* | *malonyl-CoA-acyl carrier protein transacylase* | 6.327 | <0.001 | up | ko00061 |
|  | *FabF* | *3-oxoacyl-[acyl-carrier-protein] synthase II* | 4.851 | 0.038 | up | ko00061 |
|  | *MECR* | *mitochondrial enoyl-[acyl-carrier protein] reductase* | 4.556 | 0.024 | up | ko00061 |
|  | *ACSL* | *long-chain fatty acid CoA ligase* | 2.684 | 0.004 | up | ko00061, ko00071 |
|  | *CPT1* | *carnitine O-palmitoyltransferase 1* | 7.179 | <0.001 | up | ko00071 |
|  | *CPT2* | *carnitine O-palmitoyltransferase 2* | 7.489 | <0.001 | up | ko00071 |
|  | *echA* | *enoyl-CoA hydratase* | 6.524 | <0.001 | up | ko00071 |
|  | *ALDH* | *aldehyde dehydrogenase* | 5.159 | 0.004 | up | ko00010, ko00071, ko00561 |
|  | *TGL* | *Triacylglycerol lipase* | -4.546 | <0.001 | down | ko00561 |
|  | *AGPAT* | *1-acyl-sn-glycerol-3-phosphate acyltransferase* | 7.589 | <0.001 | up | ko00561 |
|  | *ACOT* | *acyl-coenzyme A thioesterase* | 7.328 | <0.001 | up | ko1040 |
|  | *ELOVL* | *elongation of very long chain fatty acids* | 8.516 | <0.001 | up | ko1040 |
|  | *HSD17B12* | *17beta-estradiol 17-dehydrogenase* | 8.538 | <0.001 | up | ko0062, ko01040 |
|  | *LDH* | *lactate dehydrogenase* | 3.405 | <0.001 | up | ko00010 |
|  | *FBA* | *fructose-bisphosphate aldolase* | 9.064 | <0.001 | up | ko00010 |
|  | *G6PC* | *glucose-6-phosphatase* | 3.593 | 0.042 | up | ko00010 |
|  | *PCK* | *phosphoenolpyruvate carboxykinase* | 7.828 | <0.001 | up | ko00010, ko00020 |
|  | *SDH* | *succinate dehydrogenase* | 2.393 | <0.001 | up | ko00020 |
| LT vs. LS | *ACADM* | *acyl-CoA dehydrogenase* | 9.370 | 0.005 | up | ko00071 |