Phosphorylation of Ser-204 and Tyr-405 in human malonyl-CoA decarboxylase expressed in silkworm *Bombyx mori* regulates catalytic decarboxylase activity

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Figure S1. Malonyl-CoA decarboxylase (MCD) plays essential roles in lipid metabolism with acetyl-CoA carboxylase 1 and 2 (ACC1 and ACC2) by modulating the acetyl-CoA and malonyl-CoA in muscle, adipose and liver tissues. MCD catalyzes the conversion of malonyl-CoA to acetyl-CoA. The malonyl-CoA is an intermediate metabolite for fatty acid synthesis and acts as an inhibitor of carnitine palmitoyl transferase 1 (CPT-1) for fatty acid β-oxidation. Thus, MCD modulates the lipid metabolism by regulation of malonyl-CoA levels. Modified from Wakil and Abu-Elheiga, 2009.

Reference
Figure S2. A proposed model of malonyl-CoA decarboxylase (MCD) phosphorylation in regulating lipid metabolism. Phosphorylation of Ser-204 and Tyr-405 in MCD enhances malonyl-CoA decarboxylation by reducing malonyl-CoA levels in cytoplasm, which promotes a stimulation of long chain acryl-CoA (LCACoA) oxidation by releasing the malonyl-CoA inhibition of carnitine palmitoyl transferase 1 (CPT1). In addition to MCD dependent regulation, phosphorylation of acetyl-CoA carboxylase (ACC) by AMP-activated kinase (AMPK) or inhibition of ACC by Spot14/Mig12 diminishes malonyl-CoA levels, subsequently promoting lipid oxidation.
Figure S3. Construction of recombinant bacmid by Bac-to-Bac system and protein production using silkworms. Amp\textsuperscript{R}; Ampicillin resistance, Gm\textsuperscript{R}; Gentamycin resistance, Km\textsuperscript{R}; kanamycin resistance, Tet\textsuperscript{R}; tetracycline resistance, P\textsubscript{PH}; polyhedrin promoter.