# Metabolic engineering for the production of short chain alkane

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The β-oxidation was blocked by *fadE* gene deletion preventing degradation of fatty acyl-CoAs, and the activity of 3-oxoacyl-ACP synthase (*FabH*), which is inhibited by unsaturated fatty acyl-ACPs, was enhanced to promote the initiation of fatty acid biosynthesis by deleting the *fadR* gene. A modified thioesterase was employed to convert short chain fatty acyl-ACPs to the corresponding FFAs, which were consequently converted to short chain alkanes by the sequential reactions of *E. coli* fatty acyl-CoA synthetase, *Clostridium acetobutylicum* fatty acyl-CoA reductase and *Arabidopsis thaliana* fatty aldehyde decarbonylase. The resulting strain produced up to 580.8 mg $L^{-1}$ of SCAs
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