

Supplemental Table 1: Composition of lycopene placebo beadlet<sup>1</sup>

Ingredients:	Composition, %
Gelatin	25-35
Sucrose	20-35
Corn Starch	20-30
Sodium Ascorbate	0.5-2.5
d,1- $\alpha$ -tocopherol (E307)	0.5-2.0
Ascorbyl Palmitate (E304)	0.1-1.2
Tri-calcium phosphate (E341)	0.4-0.6
Water	2-5

<sup>1</sup> BASF, Ludwigshafen, Germany

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Supplemental Table 2: Primers sequences for RT-PCR analysis of liver and mesenteric adipose tissue from BCO2-KO mice

Genes:	Forward:	Reverse:
<i>Abca1</i>	Qiagen QuantiTech Primer Assay:	QT00165690
<i>Abcb11</i>	TCTGACTCAGTGATTCTTCGCA	CCCATAAACATCAGCCAGTTGT
<i>Abcg1</i>	Qiagen QuantiTech Primer Assay:	QT00113519
<i>Abcg5</i>	AGGGCCTCACATCAACAGAG	GCTGACGCTGTAGGACACAT
<i>Abcg8</i>	CTGTGGAATGGGACTGTACTTC	GTTGGACTGACCACTGTAGGT
<i>Acad-M</i>	AGGGTTTAGTTTTGAGTTGACGG	CCCCGCTTTTGTTCATATTCCG
<i>Acad-VL</i>	CTACTGTGCTTCAGGGACAAC	CAAAGGACTTCGATTCTGCCC
<i>Acox1</i>	TAACCTCCTCACTCGAAGCCA	AGTTCCATGACCCATCTCTGTC
<i>ApoB</i>	TTGGCAAACATGCATAGCATCC	TCAAATTGGGACTCTCCTTTAGC
<i>β-Actin</i>	CTTTTCCAGCCTTCCTTCTTGG	CAGCACTGTGTTGGCATAGAGG
<i>Cd36</i>	GCGACATGATTAATGGCACA	CCTGCAAATGTCAGAGGAAA
<i>Cidea</i>	TGACATTCATGGGATTGCAGAC	GGCCAGTTGTGATGACTAAGAC
<i>Cyp7a1</i>	GGGATTGCTGTGGTAGTGAGC	GGTATGGAATCAACCCGTTGTC
<i>Cyp8b1</i>	CCTCTGGACAAGGGTTTTGTG	GCACCGTGAAGACATCCCC
<i>Cytc</i>	CCAAATCTCCACGGTCTGTTT	ATCAGGGTATCCTCTCCCCAG
<i>Dgat1</i>	TCCGTCCAGGGTGGTAGTG	TGAACAAAGAATCTTGCAGACGA
<i>Fatp1</i>	CGCTTTCTGCGTATCGTCTG	GATGCACGGGATCGTGTCT
<i>Fatp2</i>	TCCTCCAAGATGTGCGGACT	TAGGTGAGCGTCTCGTCTCG
<i>Fatp4</i>	ACTGTTCTCCAAGCTAGTGCT	GATGAAGACCCGGATGAAACG
<i>Fatp5</i>	TCTATGGCCTAAAGTTCAGGCG	CTTGCCGCTCTAAAGCATCC
<i>Hsl</i>	CCAGCCTGAGGGCTTACTG	CTCCATTGACTGTGACATCTCG
<i>Lpl</i>	GGGAGTTTGGCTCCAGAGTTT	TGTGTCTTCAGGGGTCCTTAG
<i>Mgl1</i>	CGGACTTCCAAGTTTTTGTGAGA	GCAGCCACTAGGATGGAGATG
<i>Pck1</i>	CTGCATAACGGTCTGGACTTC	CAGCAACTGCCCCGACTCC
<i>Pgc1α</i>	TATGGAGTGACATAGAGTGTGCT	CCACTTCAATCCACCCAGAAAAG
<i>Pnpla2</i>	GGATGGCGGCATTTTCAGACA	CAAAGGGTTGGGTTGGTTCAG
<i>PPARα</i>	GTACCACTACGGAGTTCACGCA	CATTGTGTGACATCCCGACAG
<i>PPARγ</i>	GGATAAAGCATCAGGCTTCCAC	AACCTGATGGCATTGTGAGACA
<i>Prdm16</i>	CCACCAGCGAGGACTTCAC	GGAGGACTCTCGTAGCTCGAA
<i>Slc2a4</i>	GTGACTGGAACACTGGTCCTA	CCAGCCACGTTGCATTGTAG
<i>Scd</i>	CCGGAGACCCCTTAGATCGA	TAGCCTGTAAAAGATTTCTGCAAACC
<i>Ucp1</i>	AGGCTTCCAGTACCATTAGGT	CTGAGTGAGGCAAAGCTGATTT
<i>Ucp3</i>	CTGCACCGCCAGATGAGTTT	ATCATGGCTTCAAATCGGACC

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Supplemental Table 3: Spearman's rank correlation of PPAR $\alpha$ -associated genes in mesenteric adipose tissue of BCO2-KO mice.<sup>1</sup>

$R^2$	<i>Acad-M</i>	<i>Acad-VL</i>	<i>Acox1</i>	<i>Cd36</i>	<i>Fatp1</i>	<i>Fatp4</i>	<i>Hsl</i>	<i>Lpl</i>	<i>MglI</i>	<i>Pnpla2</i>	<i>PPAR<math>\alpha</math></i>
<i>Acad-M</i>	1.00										
<i>Acad-VL</i>	0.64 ***	1.00									
<i>Acox1</i>	0.53 ***	0.78 ***	1.00								
<i>Cd36</i>	0.65 ***	0.82 ***	0.89 ***	1.00							
<i>Fatp1</i>	0.69 ***	0.83 ***	0.89 ***	0.80 ***	1.00						
<i>Fatp4</i>	0.54 ***	0.80 ***	0.59 ***	0.73 ***	0.58 ***	1.00					
<i>Hsl</i>	0.39 **	0.77 ***	0.90 ***	0.88 ***	0.74 ***	0.66 ***	1.00				
<i>Lpl</i>	0.11	0.18	0.15	0.09	0.06	0.11	0.12	1.00			
<i>MglI</i>	0.39 **	0.79 ***	0.88 ***	0.85 ***	0.76 ***	0.73 ***	0.95 ***	0.07 ***	1.00		
<i>Pnpla2</i>	0.53 ***	0.76 ***	0.96 ***	0.87 ***	0.88 ***	0.53 ***	0.87 ***	0.13 ***	0.86 ***	1.00	
<i>PPAR<math>\alpha</math></i>	0.26	0.60 ***	0.65 ***	0.66 ***	0.56 ***	0.52 ***	0.78 ***	-0.13	0.75 ***	0.60 ***	1.00

<sup>1</sup> \*\* and \*\*\* represents p-values <0.01 and <0.001 respectively.

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Supplemental Table 4: Spearman's rank correlation of PPAR $\gamma$ -associated genes in mesenteric adipose tissue of BCO2-KO mice.<sup>1</sup>

R <sup>2</sup>	<i>Cidea</i>	<i>Cysc</i>	<i>Dgat</i>	<i>Lpl</i>	<i>Pck1</i>	<i>Pgc1a</i>	<i>PPAR<math>\gamma</math></i>	<i>Prdm16</i>	<i>Slc2a4</i>	<i>Ucp1</i>	<i>Ucp3</i>
<i>Cidea</i>	1.00										
<i>Cysc</i>	0.67 ***	1.00									
<i>Dgat</i>	0.32 *	0.43 **	1.00								
<i>Lpl</i>	0.26 (p=0.06)	0.28 (p=0.06)	0.22	1.00							
<i>Pck1</i>	0.34 *	0.30 *	0.54 ***	-0.08	1.00						
<i>Pgc1a</i>	0.56 ***	0.75 ***	0.43 **	0.11	0.30 *	1.00					
<i>PPAR<math>\gamma</math></i>	0.56 ***	0.58 ***	0.58 ***	0.63 ***	0.56 ***	0.67 ***	1.00				
<i>Prdm16</i>	0.65 ***	0.67 ***	0.60 ***	0.56 ***	0.44 **	0.67 ***	0.75 ***	1.00			
<i>Slc2a4</i>	0.47 ***	0.62 ***	0.65 ***	0.06	0.35 *	0.73 ***	0.75 ***	0.52 ***	1.00		
<i>Ucp1</i>	0.41 ***	0.61 ***	0.34 *	0.36 *	0.17	0.39 *	0.49 **	0.35 **	0.31 *	1.00	
<i>Ucp3</i>	0.44 **	0.54 ***	0.49 **	0.39 *	0.39 *	0.62 ***	0.80 ***	0.42 **	0.63 ***	0.47 **	1.00

<sup>1</sup> \*, \*\* and \*\*\* represents p-values <0.05, <0.01 and <0.001 respectively.