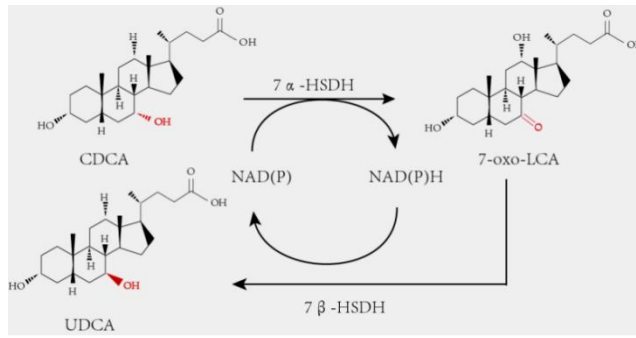
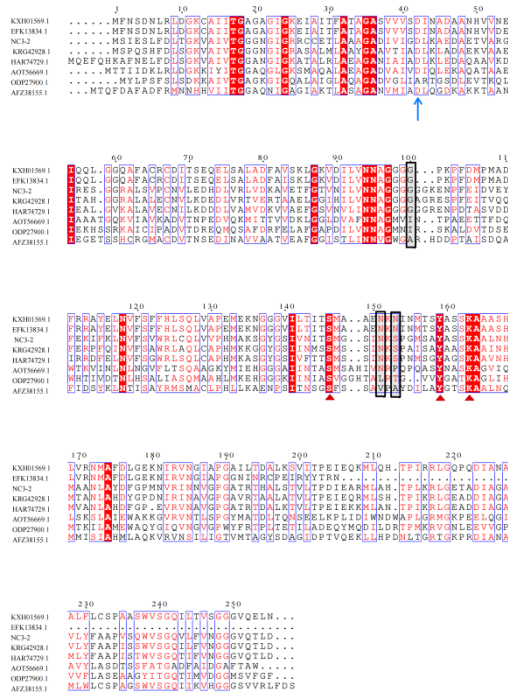


附图



附图 1 UDCA 酶法合成过程

Supplementary Figure 1 Diagram of the process of synthesizing UDCA using CDCA as raw material



红色三角形：催化三联体；黑色方框：底物结合位点；蓝色箭头：识别辅酶位点。比对序列的菌株来源及登录号分别为：*Escherichia coli* HB101 (KXH01569.1) , *Escherichia coli* MS 116-1 (EFK13834.1) *Stenotrophomonas pictorum* JCM 9942 (KRG42928.1) *Psychrobacter* sp. (HAR74729.1) *Weissella soli* (AOT56669.1) *Paenibacillus nuruki* (ODP27900.1) *Stanieria cyanosphaera* PCC 7437 (AFZ38155.1)

Red triangle: catalytic triad; Black square: substrate binding site; Blue arrow: coenzyme recognition site. The strain source and GenBank number of the alignment sequence are *Escherichia coli* HB101 (KXH01569.1) , *Escherichia coli* MS 116-1 (EFK13834.1) *Stenotrophomonas pictorum* JCM 9942 (KRG42928.1) *Psychrobacter* sp. (HAR74729.1) *Weissella soli* (AOT56669.1) *Paenibacillus nuruki* (ODP27900.1) *Stanieria cyanosphaera* PCC 7437 (AFZ38155.1)

附图 2 不同来源的 7α-羟基类固醇脱氢酶的多序列比对分析

Supplementary Figure 2 Multi-sequence comparison analysis of c from different sources

附表

附表 1 PCR 扩增程序

Supplementary Table 1 PCR amplification procedure

步骤	温度	时间
1	98 °C	3 min
2	98 °C	10 s
3	70-75 °C	20 s
4	72 °C	30 s
2-4: 15 个循环, 每个循环降低 1 °C		
5	98 °C	10 s
6	55 °C	20 s
7	72 °C	30 s
5-7: 20 个循环		
8	72 °C	5 min
9	4 °C	10 min

附表 2 NC3-2 与部分来源的 7 α -HSDH 酶学性质比较Supplementary Table 2 Comparison of the enzymatic properties of NC3-2 and some sources of 7 α -HSDH

Source	Enzyme	Optimal pH	Optimal Temperature (°C)	Coenzyme	Specific Activity (U/mg)	Literature
<i>Nomascus concolor</i> gut metagenome	NC3-2	10.0	50	NAD ⁺	485.53 (CDCA)	This study
<i>Ursus thibetanus</i> gut metagenome	J-1-1	10.5	45	NADP ⁺	188.3(TCDCA) 217.6(GCDCA)	[11]
<i>Bacteroides fragilis</i>	OGX95366.1	8.5	65	NAD ⁺	351 (CDCA)	[2]
<i>Brevundimonas</i> sp.		10.0	60	NAD ⁺	471 (CDCA)	[3]
<i>Clostridium</i> <i>absonum</i>		7.5-8.0	40	NADP ⁺	59(CDCA)	[4]
<i>Clostridium</i> <i>difficile</i>	WP_0118606 31.1		60	NADP ⁺	8.5(CDCA) 160(CA)	[5]
<i>Clostridium</i> <i>sordellii</i>	AAA53556.1				340(CDCA)	[6]
<i>Escherichia coli</i> HB101	KXH01569.1	8.5		NAD ⁺	268(CA) 190(CDCA)	[7]
<i>Shewanella</i> <i>morhuae</i>	Sm 7 α -HSDH	9.0	40	NAD ⁺	281(CDCA)	[8]
<i>Xanthomonas</i> <i>maltophilia</i>		7.5		NAD ⁺	351 (CDCA)	[9,10]

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