

## I-2.1 Summary of manufacturers

There used to be seven players of biotin in China in the end of 2002. But because the immature production technology and the decreasing price of biotin in the period 2003~2005, some players could not maintain continually. Therefore, three players have given up biotin production since 2004.

Table I-2.1-1 The biotin manufacturers having stopped production before 2005

No.	Company	Location	Stop time
1	[REDACTED]	Sichuan	[REDACTED]
2	[REDACTED]	Jiangsu	[REDACTED]
3	[REDACTED]	Henan	[REDACTED]

Source: CCM international Ltd

At present, there are only four active manufacturers of biotin in China, including [REDACTED]

[REDACTED]

Table I-2.1-2 The active manufacturers of biotin in China, 2008

No.	Abbreviation	Location	Ownership	Technology source	Product species	Cap'08, t/a	Output'07 tonne
1	[REDACTED]	[REDACTED]	Stock	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
2	[REDACTED]	[REDACTED]	Stock	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
3	[REDACTED]	[REDACTED]	Private	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
4	[REDACTED]	[REDACTED]	Joint venture	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

## I-4.1 Import situation

In 2007, all the imported biotin into China is feed grade ([REDACTED]%), and no pharmaceutical grade (98%) biotin was imported into China. The main importers of biotin in 2007 [REDACTED]

[REDACTED]

[REDACTED] The average import price of biotin in 2007 is USD14.31/kg. The products imported from [REDACTED] have the highest price.

Table I-4.1-1 The import situation of biotin in China, 2007(Quantity (kg); Price (USD/kg); Value (USD))

Importer	France		Japan		Switzerland		Total	
	Quantity	Price	Quantity	Price	Quantity	Price	Quantity	Price
████████████████████	████	████	████	████	████	████	████	████
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<b>Total</b>	████	████	████	████	████	████	████	████

Source: CCM international

#### I-4.2 Export situations

In 2007, the pharmaceutical grade biotin is the main grade exported from in China, with the export value accounting for █████% of China's total biotin export. And its export volume was █████kg, accounting for █████% of China's total biotin export.

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Table I-4.2-1 Export price of biotin in 2007 (Quantity (kg); Price (USD/kg); Value (USD))

Month	2% biotin		98% biotin		Total	
	Quantity	Price	Quantity	Price	Quantity	Value
Jan	████	████	████	████	████	2,236,033
Feb	████	████	████	████	████	1,549,340
Mar	████	████	████	████	████	████
Apr	████	████	████	████	████	████
May	████	████	████	████	████	████
Jun	████	████	████	████	████	████
Jul	████	████	████	████	████	████
Aug	████	████	████	████	████	████
Sep	████	████	████	████	████	████
Oct	████	████	████	████	████	████
Nov	████	████	████	████	████	████
Dec	████	████	████	████	████	████
<b>Total</b>	████	████	████	████	████	████

Source: CCM international

#### I-5.1.2 Consumption pattern of biotin in China

The biotin consumption pattern in China has changed a lot from 2001-2007, with the change in production and price.

In 2002, █████% of world biotin was consumed in pharmaceutical industry and █████% was used to produce feed additive agents. The consumption of biotin in China in 2003 was reported to

be around [REDACTED] kg, and it was mainly used in pharmaceutical industry. However, in 2005 China's consumption of biotin had significantly increased to [REDACTED] kg in which feed industry took a part of [REDACTED]%. And in 2007 biotin was more used in feed industry.

Table I-5.1.2-1 Biotin consumption pattern in China from 2003-2007

	2003		2005		2007	
Consumption pattern	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Feed industry	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Fermentation industry	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Healthcare products and pharmaceutical industry	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
<b>Total</b>	[REDACTED]	<b>100%</b>	[REDACTED]	<b>100%</b>	[REDACTED]	<b>100%</b>

Source: CCM international Ltd.

## II-2.4 Chemical Synthetic Method

Table II-2.4.1-1 Yield rate of each reaction of Process A

Reaction NO.	Reaction name	Yield rate
A	Acylation ammoniation	[REDACTED]
B	Reduction reaction	[REDACTED]
C	Hydrolysis	[REDACTED]
D	Sulfidation reaction	[REDACTED]
E	[REDACTED]	[REDACTED]
F	[REDACTED]	
G	[REDACTED]	
H	[REDACTED]	
I	[REDACTED]	[REDACTED]
J	[REDACTED]	[REDACTED]
K	[REDACTED]	[REDACTED]

Source: CCM international Ltd

Table II-2.4.1-2 Estimation on raw material cost for Process A

No.	Raw Materials	Consumption, Unit / kg Biotin	Unit	Price, RMB/Unit	Unit cost, RMB/kg Biotin
1	[REDACTED]	[REDACTED]	kg	[REDACTED]	[REDACTED]
2	[REDACTED]	[REDACTED]	kg	[REDACTED]	[REDACTED]
3	[REDACTED]	[REDACTED]	kg	[REDACTED]	[REDACTED]
4	[REDACTED]	[REDACTED]	kg	[REDACTED]	[REDACTED]
5	[REDACTED]	[REDACTED]	kg	[REDACTED]	[REDACTED]
6	[REDACTED]	[REDACTED]	kg	[REDACTED]	[REDACTED]
7	[REDACTED]	[REDACTED]	kg	[REDACTED]	[REDACTED]
8	[REDACTED]	[REDACTED]	L	[REDACTED]	[REDACTED]
9	[REDACTED]	[REDACTED]	L	[REDACTED]	[REDACTED]
10	[REDACTED]	[REDACTED]	kg	[REDACTED]	[REDACTED]
11	[REDACTED]	[REDACTED]	L	[REDACTED]	[REDACTED]
12	Diethyl malonate	[REDACTED]	kg	[REDACTED]	[REDACTED]
13	Potassium Acetate	[REDACTED]	kg	[REDACTED]	[REDACTED]
14	Ammonium formate	[REDACTED]	kg	[REDACTED]	[REDACTED]
15	[REDACTED]	[REDACTED]	kg	[REDACTED]	[REDACTED]
16	[REDACTED]	[REDACTED]	kg	[REDACTED]	[REDACTED]
17	[REDACTED]	[REDACTED]	kg	[REDACTED]	[REDACTED]
18	[REDACTED]	[REDACTED]	g	[REDACTED]	[REDACTED]
19	[REDACTED]	[REDACTED]	g	[REDACTED]	[REDACTED]
20	[REDACTED]	[REDACTED]	L	[REDACTED]	[REDACTED]
21	[REDACTED]	[REDACTED]	L	11.32	[REDACTED]
22	[REDACTED]	[REDACTED]	L	7.00	[REDACTED]
23	[REDACTED]	[REDACTED]	L	6.93	[REDACTED]
24	[REDACTED]	[REDACTED]	L	6.50	[REDACTED]
25	[REDACTED]	[REDACTED]	kg	[REDACTED]	[REDACTED]
26	[REDACTED]	[REDACTED]	L	[REDACTED]	[REDACTED]
27	[REDACTED]	[REDACTED]	kg	[REDACTED]	[REDACTED]
28	[REDACTED]	[REDACTED]	kg	[REDACTED]	[REDACTED]
29	[REDACTED]	[REDACTED]	L	[REDACTED]	[REDACTED]
30	[REDACTED]	[REDACTED]	kg	[REDACTED]	[REDACTED]
31	[REDACTED]	[REDACTED]	L	[REDACTED]	[REDACTED]
32	[REDACTED]	[REDACTED]	L	[REDACTED]	[REDACTED]
33	[REDACTED]	[REDACTED]	kg	[REDACTED]	[REDACTED]
34	[REDACTED]	[REDACTED]	kg	[REDACTED]	[REDACTED]
35	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
	<b>Total</b>				[REDACTED]

Table II-3.1.2-4 Estimation on profit of biotin in [REDACTED] in September 2008

Item	RMB / kg biotin
<b>1.Income</b>	[REDACTED]
[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]
<b>2.Expense</b>	[REDACTED]
[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]
<b>3.Gross Profit</b>	[REDACTED]
<b>4.Profit tax</b>	[REDACTED]
<b>5.Profit after tax</b>	[REDACTED]