

II-1.2 Summary of Production

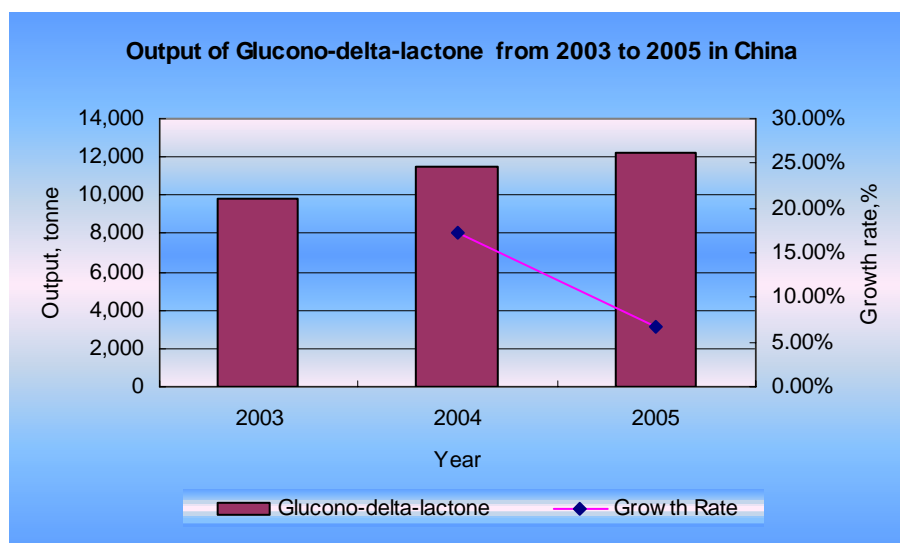
The output of glucono-delta-lactone in 2005 was █████ tonnes, increased by 6.79% over the previous year. The output growth of glucono-delta-lactone had increased fast in the recent years before 2005, but it slowed down since then. The main reason is that consumption growth is not as fast as the growth of production.

The glucono-delta-lactone market had been flourishing since 2002, because more and more glucono-delta-lactone was used in bean product with the development of urbanization and bean product industry. Meanwhile, the application research in other fields was active.

Gluconate producers were optimistic about the glucono-delta-lactone industry at that time and they continued expanding their production capacity or investing in new factories.

Therefore, the production capacity of glucono-delta-lactone sharply increased. It was not until 2005 did they realize that the market was not as good as they had expected. The consumption in bean product increases slowly and it is small in other fields. So the market situation forces glucono-delta-lactone manufacturers to slow down their production expansion.

Figure II-1.2-1 Output of glucono-delta-lactone from 2003 to 2005 in China



There are some characteristics in glucono-delta-lactone production.

➤ **Glucono-delta-lactone is not the most important product in gluconate industry**

In China, most manufacturers take glucono-delta-lactone as a secondary product in their production. The main reason is that the total consumption volume of glucono-delta-lactone in domestic market is not large compared with other gluconate such as sodium gluconate.

➤ **Glucono-delta-lactone production is highly concentrated**

The glucono-delta-lactone production concentrates on a few manufacturers, in another word, most of glucono-delta-lactone manufacturers produce glucono-delta-lactone in small-scale production.

For example, the output of the largest glucono-delta-lactone manufacturer Anhui Xingzhou was ██████ tonnes in 2005, which accounted for 38.34% of the total output of glucono-delta-lactone in China. The output of the top 3 manufacturers accounted for 67.70% of the total in China.

➤ **The geographical distribution of glucono-delta-lactone production is unbalanced**

The manufacturers of glucono-delta-lactone mainly concentrate on inner provinces of China, such as Anhui province, Jiangxi province, Henan province, Hubei province. The main reasons are that the gluconate production requires much energy, such as electric power, water and coal, which is insufficient in big cities of East China; meanwhile, there is wastewater pollution in the process and the requirement of environmental protection in inner province of China is not as strict as that in big cities of East China.

➤ **The price of raw materials is increasing**

The price of raw materials of glucono-delta-lactone has increased fast in recent years; manufacturers get little profit from producing glucono-delta-lactone because of the high price of raw materials and fierce market competition. Therefore, some manufacturers pay attention to the production of other gluconate.

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II-2 Brief Introduction to Raw Materials

At present, there are two different kinds of raw materials used in industrialized production of glucono-delta-lactone. They are pharmaceutical glucose and starch. The supply situation of raw material will vary a little in the future, and more starch will be used. The main reason is that the price of pharmaceutical glucose has risen fast in recent years; and some glucono-delta-lactone manufacturers tend to use starch as raw materials to replace pharmaceutical glucose.

For example, Hubei Research Institute of Chemistry temporarily stopped producing glucono-delta-lactone, because the price of pharmaceutical glucose is so high. They will tend to adopt fermentation method and use starch as raw materials to produce glucono-delta-lactone in future.

Although only 3 manufacturers use starch as raw material to produce glucono- delta-lactone, their output accounts for 46.08% of total output of glucono-delta-lactone in 2005. Therefore,