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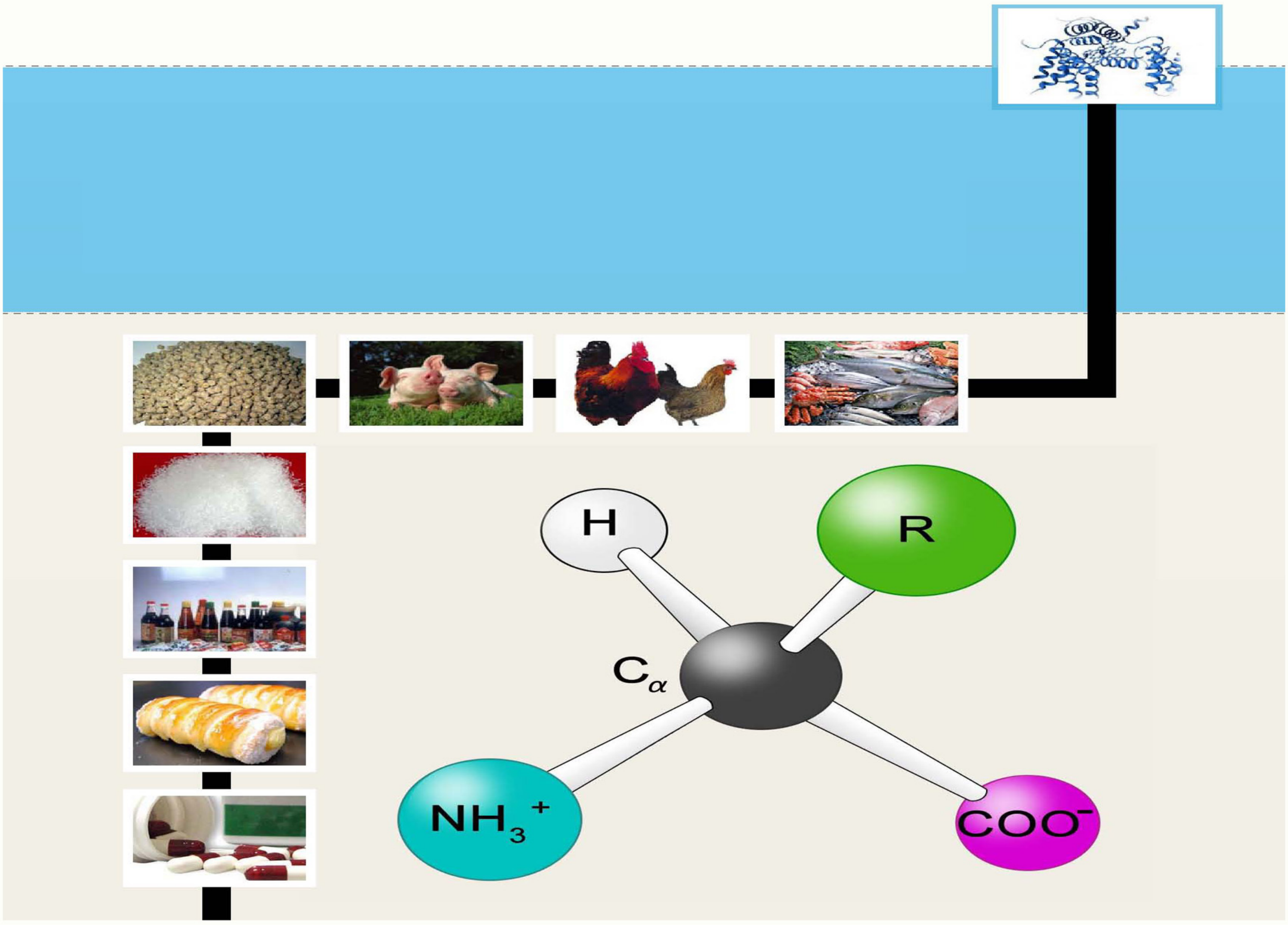

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Headline

The domestic threonine price fluctuated in 2016 under the influences of the corn price, live pig market, transportation costs and environmental pressure. As Chinese Spring Festival approaches, purchasers may replenish their inventories, pushing up demand for threonine and further, the price, in the short term.

In 2016, Chinese live pig farming saw many changes. For example, live pig prices showed ups and downs; and pig farming companies moved their businesses to inland areas due to government policies. As the industry moves forward, the Chinese government will have greater confidence in industry regulation, and the "pork cycle" could be restrained.

ChemChina announced its decision to delay tender for Syngenta again. Given ChemChina's rice experience in M&A, it is very likely that this transaction will be finalised in the near future. If so, ChemChina may further restructure its assets to avoid competition among its affiliated companies.

Sanxia Paints passed its Ningxia Unisplendour acquisition plan at the extraordinary shareholder meeting held on 5 Jan., 2017. One day prior to this meeting, the company received an inquiry from the SZSE concerning whether Ningxia Unisplendour brings about serious environmental pollution. In fact, Ningxia Unisplendour has invested a lot to upgrade facilities for production and pollutant treatment, as revealed by Sanxia Paints.

Zhejiang NHU announced the completion of trail-production for its new methionine project, indicating the company became the third methionine producer in China. Currently, Zhejiang NHU is extending into several new areas of business to boost profits. It is expected that methionine may become its main source of profits in the near future.

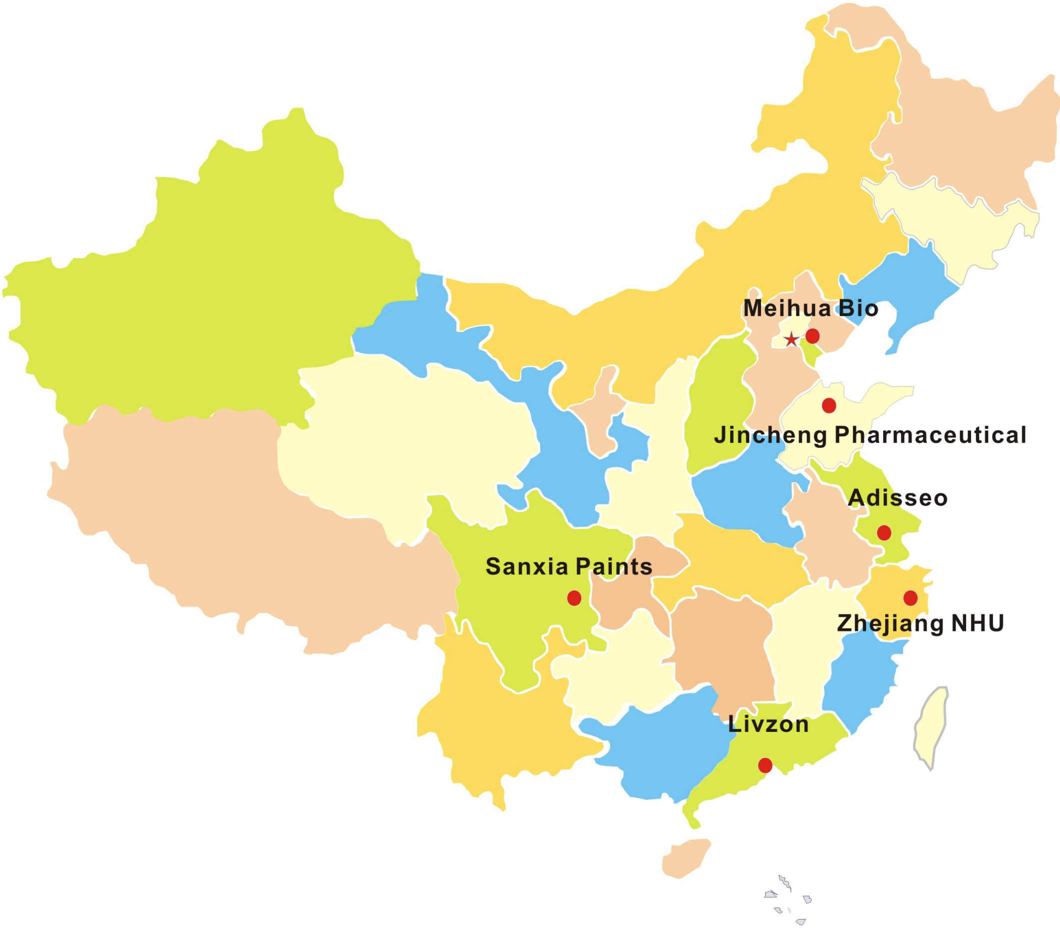
In Jan. 2017, Jincheng Pharmaceutical predicted stable profits in full-year 2016. This was mainly thanks to the growth in its main business, which eased the decrease in sales of glutathione related products. In light of weakening profits from glutathione API in recent years, the company extended into the healthcare product market which is promising but competitive as well.

Livzon offered a private placement to raise funds for new ilaprazole, McAb (monoclonal antibody) and sustained release microsphere preparation projects. In H1 2016, the company realised significant financial growth. In particular, its sales of ilaprazole enteric-coated tablets surged by 70.19% YoY and that of phenylalanine increased by 27.19% YoY.

Lysine price in the Chinese market started to decline in Jan. 2017, after its record high in Dec. 2016. This was mainly a result of the relived transportation pressure and flat sales before the arrival of the Spring Festival. CCM predicted that further slumps may be seen after the holiday.

Chinese feed enterprises should have cut feed prices at the end of 2016, but they delayed quotations until early 2017, in order to use up the corn stockpile that was purchased at high price, and improve their 2016 financial figures. It is predicted that feed price will drop once again if raw material prices continue to decrease.

In Nov. 2016, the export volume of lysine ester and salt from China rose by 70.86% YoY, thanks to the serious overcapacity in domestic market, low export price and continual RMB depreciation. European countries were the main export destinations between Jan. and Nov. Particularly, the export volume to the Netherlands increased by 71.36% YoY. Yet, as domestic market price rebounded in Q4 2016, exports of lysine ester and salt are likely to be impacted over the coming period.


Meihua Bio
Jincheng Pharmaceutical
Adisseo
Sanxia Paints
Zhejiang NHU
Livzon

Editor's Note

In Jan. 2017, some domestic amino acid producers take actions to further process their business plan.

Sanxia Paints passed its Ningxia Unisplendour acquisition plan with approvals from most shareholders at the extraordinary shareholder meeting held on 5 Jan., 2017. Prior to this meeting, the company received an inquiry from the SZSE concerning whether Ningxia Unisplendour brings about serious environmental pollution. In fact, Ningxia Unisplendour has invested a lot to upgrade facilities for production and pollutant treatment, as revealed by Sanxia Paints.

Zhejiang NHU finished pilot production for its new methionine project and became the third methionine producer in China. It is expected that methionine may become its main source of profits in the near future. Currently, Zhejiang NHU is also extending into several other new areas of business to boost profits.

Jincheng Pharmaceutical predicted stable profits in full-year 2016. In recent years, the company recorded decreasing sales of glutathione related products. In this context, the company extended into the healthcare product market, promising but competitive as well.

Phenylalanine producer Livzon offered a private placement to raise funds for new ilaprazole, McAb (monoclonal antibody) and sustained release microsphere preparation projects. The company may realise significant financial growth in full-year 2016.

Adisseo plans to introduce two specialties into the Chinese market. Meanwhile, its parent company, ChemChina, announced its decision to delay tender for Syngenta again. Given ChemChina's rice experience in M&A, it is very likely that this transaction will be finalised in the near future. If so, ChemChina may further restructure its assets to avoid competition among its affiliated companies.

This month, domestic prices of amino acids gradually stablised. Particularly, lysine price even started to decline as a result of the relived transportation pressure and flat sales before the arrival of the Spring Festival. CCM predicted that further slumps may be seen after the holiday. Conversely, the threonine price is likely be pushed up in the short term, since purchasers may replenish their inventories as Chinese Spring Festival approaches.

In regard to exports, the export volume of lysine ester and salt from China rose by 70.86% YoY in Nov. 2016, thanks to the low export price and continual RMB depreciation. Yet, as domestic market price rebounded in Q4 2016, exports of lysine ester and salt are likely to be impacted over the coming period.

The USD/RMB exchange rate in this newsletter is USD1.00=RMB6.9498 on 3 Jan., 2017, sourced from the People's Bank of China. All the prices mentioned in this newsletter will include the VAT, unless otherwise specified.

Market Dynamics

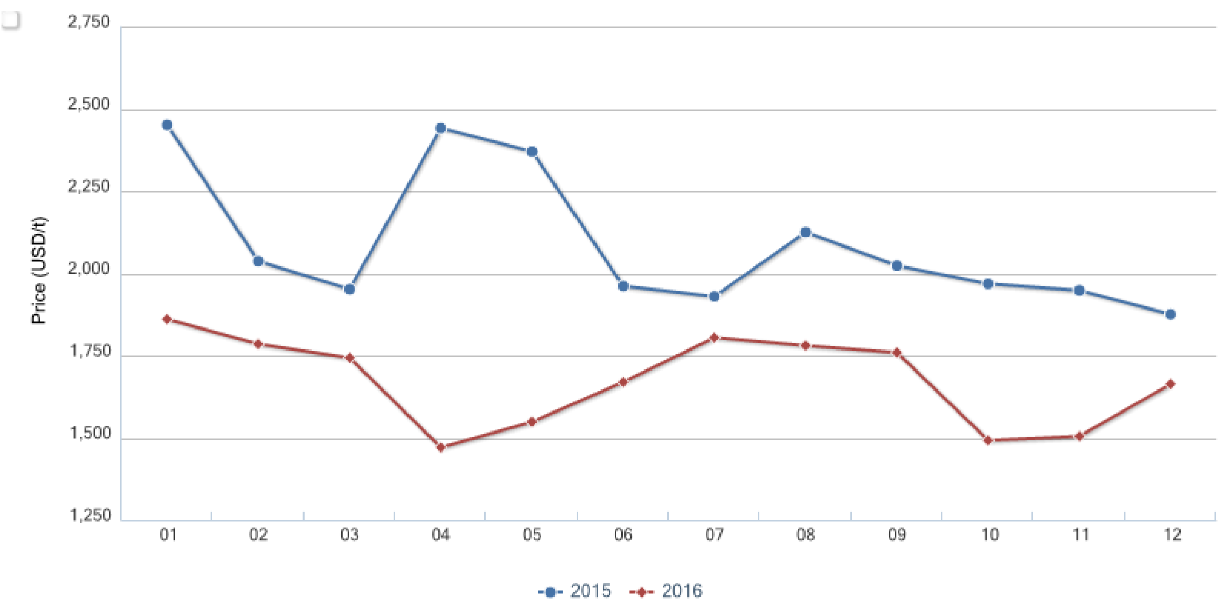
China's threonine price fluctuates in 2016

Summary: The domestic threonine price fluctuated in 2016 under the influences of the corn price, live pig market, transportation costs and environmental pressure. As Chinese Spring Festival approaches, purchasers may replenish their inventories, pushing up demand for threonine and further, the price, in the short term.

China's threonine price ran low throughout 2016. According to CCM's price monitoring, the market price of 99% feed grade threonine averaged USD1,674/t for the year, down 19.93% YoY.

Specifically, fluctuations were seen between quarters. The downward trend from late 2015 continued on into Q1 2016. Yet, the threonine price was pushed up by the increased corn price in Q2 and stablised in Q3. Following this, in Q4 the figure fell again at first, but rebounded later.

Figure 1: Monthly market price of 99%feed grade threonine in China, Jan. 2015-Dec. 2016



Source: CCM

According to CCM's research, such changes in the 2016 threonine price can be mainly ascribed to the following factors:

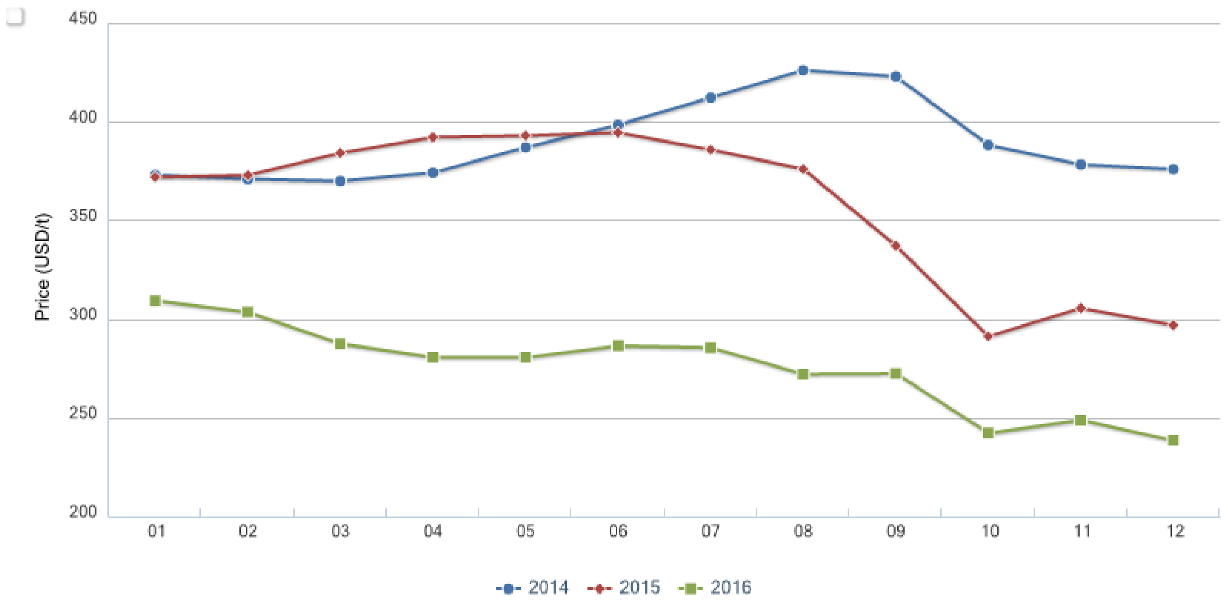
- Changes in corn price

Given that corn is the main raw material for threonine, its price is closely correlated with that of threonine . Compared with 2015, the corn price slumped in 2016 affected by the withdrawal of state purchasing of corn for temporary storage, and also by the state's huge national corn inventories (the amount of corn inventories sold through auctions reached 41.46 million tonnes in 2016). Between Jan. and Dec., the average market price of corn decreased by 23.10% YoY to USD275.68/t. Continual slumps in corn price reduced threonine production costs, failing to support a recovery in threonine prices.

Conversely, increases in the corn price can be an impetus for the threonine market. For instance, the corn price rebounded slightly in early Q2, since supply had turned tight in the domestic market prior to the launch of national auctions for temporarily stored corn.

Many threonine manufacturers took this opportunity to raise quoted prices, boosting the overall threonine price over the following few months.

Figure 2: Monthly market price of corn in China, Jan. 2014-Dec. 2016

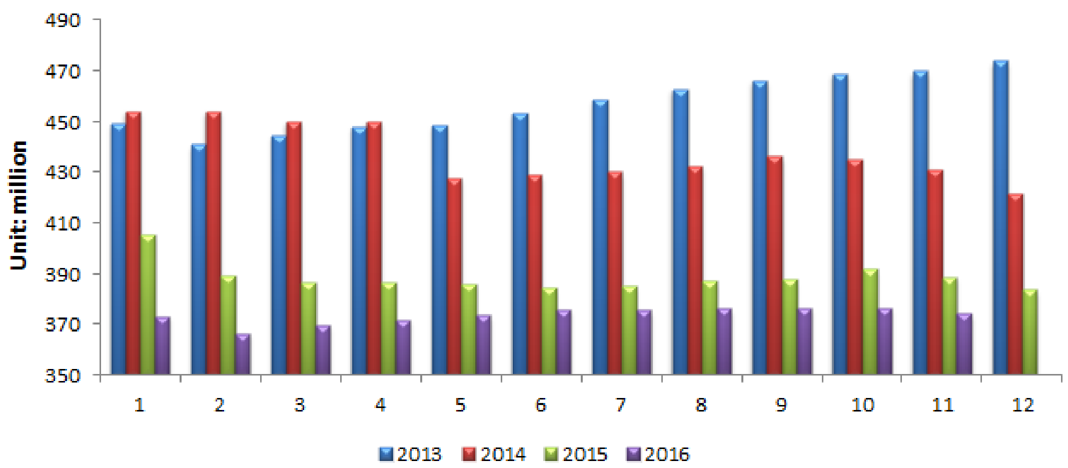


Source: CCM

- Stagnant live pig market

The domestic live pig market remained sluggish in 2016, depressing demand for feed and also threonine (which is widely used as a feed additive). Few live pig farms significantly increased their farming scale, even though the market price of live pigs hit a record high of USD3,178/t in June. As of Nov., the number of live pigs on farms nationwide stood at around 374 million, down 3.77% YoY and down 20.35% over 2013, according to the Ministry of Agriculture of the People's Republic of China.

Figure 3: Number of live pigs on farms in China, Jan. 2013-Nov. 2016



Source: Ministry of Agriculture of the People's Republic of China

- Intensified transportation pressure

Since Sept. 2016, newly released traffic regulations have lowered the maximum carrying capacity for trucks. This, together with a two-year administrative regulation targeted at freight carrier overloading, has significantly decreased the carrying capacity of trucks.

That aside, in Nov. 2016, a strong cold front swept through the entire country, boosting demand for heating. The transportation of coal was prioritised, which affected deliveries of feed additives and raised transportation costs. This situation even worsened later when newly harvested grains (like corn) flooded into the market.

In this context, the threonine price was stimulated in Nov. and Dec.

- Heavy environmental pressure

Domestic producers of feed additives, such as lysine, vitamin C and soybean meal, have faced heavy environmental pressure since national environmental inspections were launched in July 2016. What's worse, northern and central China have been shrouded by thick smog ever since early Q4, drawing wide attention from the public and prompting the authorities to take action to control air pollution. As a consequence, a new round of national environmental inspections started in Dec. In this context, production of threonine was limited by strict regulations in late 2016, pushing up the price.

China's threonine price remained stable around the New Year's Day holiday (from 31 Dec., 2016 to 2 Jan., 2017). Yet, purchasers may stockpile in preparation for the coming Chinese Spring Festival (late Jan. to early Feb. 2017, during which most producers suspend production), increasing demand for threonine. In light of this, CCM predicts that the price of threonine may go up slightly in the short term.

Picture 1: The Beijing National Stadium before and after being enveloped by smog

Source: baidu.com

Changes come to Chinese live pig farming in 2016

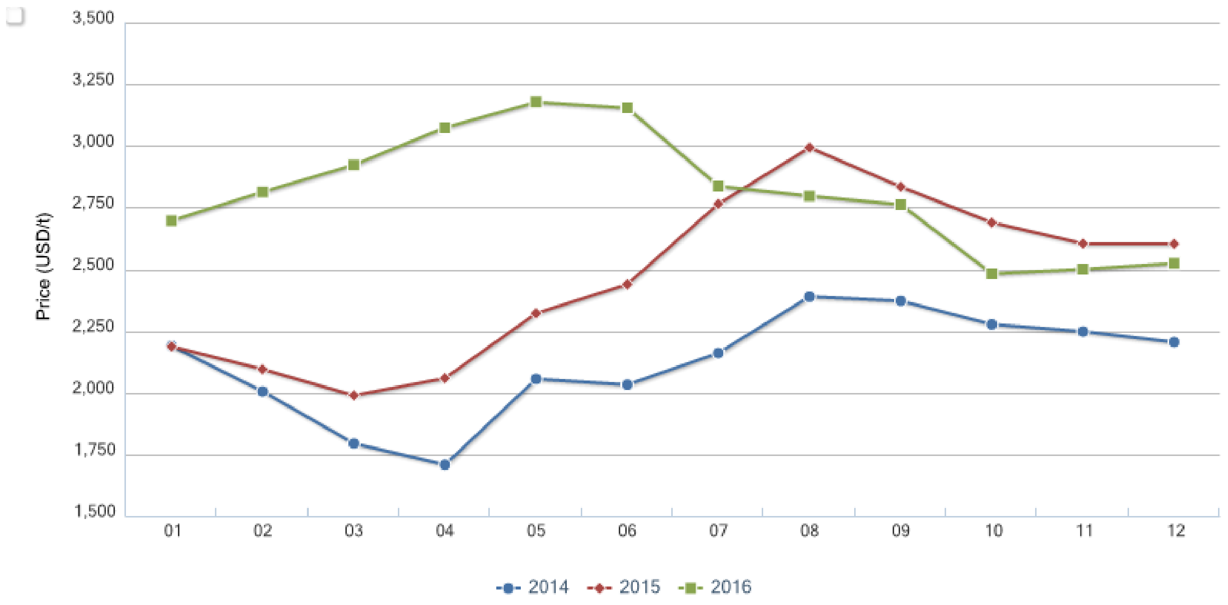
Summary: In 2016, Chinese live pig farming saw many changes. For example, live pig prices showed ups and downs; and pig farming companies moved their businesses to inland areas due to government policies. As the industry moves forward, the Chinese government will have greater confidence in industry regulation, and the "pork cycle" could be restrained.

In 2016, Chinese live pig farming embraced changes in prices, business relocation, policies, etc.

Fluctuating prices

In 2016, China's live pig price surged and hit a record high in May. According to CCM's price monitoring, the market price reached USD3,177.68/t (RMB22,084/t) in May, up 36.9% YoY. The price remained high in H1, but started to drop in H2. After Aug., the price was at a lower level than 2015. However, the annual average price still rose by 14.1% YoY to USD2,812.03/t (RMB19,543/t).

Figure 4: China's monthly market price of live pigs, 2014-2016



Source: CCM

Strict policies have been introduced for forbidden farming regions

In 2015, China issued the *Law of Environmental Protection of the People's Republic of China*. As part of this, the government introduced many policies to reduce live pig farming businesses in southern China and coastal areas. The designation of forbidden farming regions specially put that goal into effect. All provinces took actions to shut down all pig farms within the forbidden regions in 2017.

Since April 2016, China has introduced 5 policies to eliminate small-sized pig farms that caused heavy pollution. In the past, most of China's pig farms were small-sized and individually owned. That meant that these small farms lacked the funds to take the measures necessary to mitigate the serious pollution they caused. However, strict government policies will now compel the industry to transform and upgrade.

Table 1: Policies related to Chinese live pig farming, 2016

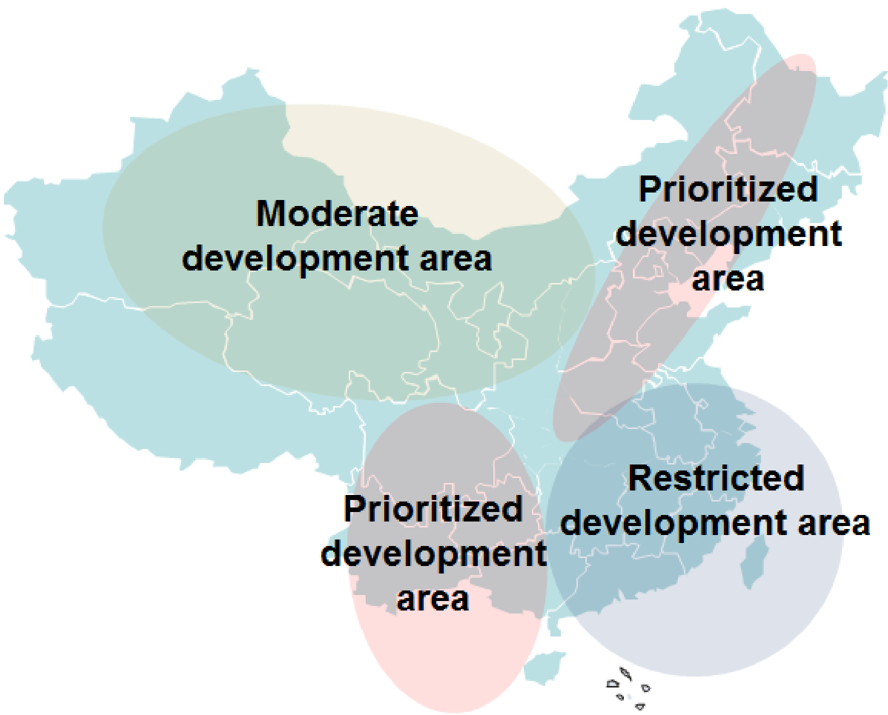
Time	Policy	Content
21 April, 2016	*National Production and Development Plan for Live Pig Farming (2016-2020)*	Restrain live pig farming development in 11 provinces/municipalities including Guangdong and Fujian; prioritize development in 7 provinces/municipalities including Guangxi Zhuang Autonomous Region and Hunan; subordinate development in 6 provinces including Yunnan and Heilongjiang.
28 May, 2016	*Action Plan on Soil Pollution Control*	Strengthen supervision of pollution sources, do a great job of soil pollution prevention and strengthen pollution control of livestock and poultry farming.
21 Nov., 2016	*Technical Guide of Delimiting Forbidden Areas of Livestock and Poultry Farming*	Unify delimitation requirements of forbidden areas of livestock and poultry farming.
5 Dec., 2016	*13th Five-year Plan for Ecological Environment Protection*	Vigorously promote pollution control of livestock and poultry farming, delimit forbidden areas of livestock and poultry farms, and require farmers/companies to remove their farms within the forbidden areas by the end of 2017.
25 Dec., 2016	*Environmental Protection Tax Law*	Change the current discharge fee system to an environmental protection tax system.

Source: China's State Council, Ministry of Agriculture and Ministry of Environmental Protection

Business shift from coastal areas to inland areas

In 2016, China's leading live pig farming companies started to shift their businesses to Northeast, Northwest and Southwest China. For example, Guangdong Wen's Foodstuff Group Co., Ltd. (Wens) signed a live pig farming project in Yunnan Province, and has raised 14 million heads of live pigs; New Hope Liuhe Co., Ltd. (New Hope Liuhe) invested USD800.02 million (RMB5.56 billion) to establish 9 pig farming enterprises in Shandong, Sichuan and North China. Currently, 17 companies have invested a total of USD21.21 billion (RMB147.40 billion) in new projects to raise 920.70 billion pigs. All these projects accelerated the inland movement of live pig farms in China, and filled the market gap left by the withdrawal of small-sized and individual farms.

Picture 2: Development trend of Chinese live pig farming, 2016



Source: CCM

Surging profits of pig farming companies

Thanks to the rising live pig price in 2016, pig farming companies enjoyed considerable profits. Take Wens's Jan.-Sept. 2016 financial performance as an example:

- Revenue: USD6.28 billion (RMB43.64 billion), up 27.6% YoY
- Net profit: USD1.56 billion (RMB108.37 million), up 124.9% YoY

According to Wens's previous forecast of 2016 full-year net profit, the figure will reach USD1.63 billion-USD1.82 billion (RMB113.55 million-RMB126.58 million), up 83%-104% YoY.

What's more, feed companies also recorded rises in net profit in Jan.-Sept. 2016:

- New Hope Liuhe: USD304.18 million (RMB2.11 billion), up 19.1% YoY
- Guangdong Haid Group Co., Ltd.: USD126.62 million (RMB880 million), up 20.5% YoY

Table 2: Some Chinese live pig farming and feed companies' financial performance, Jan.-Sept. 2016

Company	Name	Revenue (USD million)	YoY change (%)	Net profit (USD million)	YoY change (%)
Live pig farming companies	Guangdong Wen's Foodstuff Group Co., Ltd.	6,279.89	+27.62	1,559.33	124.94
	Chuying Agro-pastoral Group Co., Ltd.	614.55	+92.78	15.40	566.95
	Muyuan Foodstuff Co., Ltd.	232.52	+96.70	99.28	196.99
	Hunan New Wellful Co., Ltd.	169.65	+26.13	29.64	2,212.43
Feed companies	New Hope Liuhe Co., Ltd.	6,379.75	-4.82	304.18	19.06
	Guangdong Haid Group Co., Ltd.	2,873.90	+13.40	126.62	20.47
	Beijing Dabeinong Technology Group Co., Ltd.	1,703.21	+1.60	85.61	51.00
	Tongwei Co., Ltd.	1,596.16	-8.04	50.22	6.29

Source: CCM

Of course, domestic live pig farming still faces many positives and challenges. For instance, the continuously falling corn price is cutting down production cost of farming; but at the same time, surging imports of pork may threaten the domestic industry. All in all, with the help of the aforementioned changes in Chinese live pig farming, the country has greater confidence in regulating the industry. This is conducive to restraining the "pork cycle" (= the phenomenon of cyclical fluctuations of supply and prices in livestock markets) and reducing environmental pollution.

Company Developments

ChemChina to expand overseas mergers

Summary: ChemChina announced its decision to delay tender for Syngenta again. Given ChemChina's rice experience in M&A, it is very likely that this transaction will be finalised in the near future. If so, ChemChina may further restructure its assets to avoid competition among its affiliated companies.

On 20 Dec., 2016, China National Chemical Corporation (ChemChina) announced a second extension of its tender for Switzerland's agricultural giant Syngenta to 2 March, 2017. Prior to this, on 1 Nov, 2016, the company had delayed the offer to 5 Jan., 2017.

On 3 Feb., 2016, Syngenta agreed to the takeover offer from ChemChina that valued USD4.30 billion, the largest merger made by Chinese enterprise ever if finished. Yet, on 28 Oct., European Union anti-trust watchdog declared to launch investigation into this transaction, final decision of which will be unveiled on 15 March, 2017. Affected by this, ChemChina had to postpone its offer twice.

"We two parties appealed to the EU to put off the investigation and administrative review, so that we can have enough time to figure out solutions," disclosed Syngenta, "Yet, we are very confident that we will finish the deal and are making a lot of pregress." Currently, the investigation is extended to 12 April, 2017.

ChemChina is the largest chemical group in China. In 2015, the group's revenue hit USD37.44 billion (RMB260.20 billion) and ranked 243rd among the 2016 Fortune Global 500. Over the past decade, ChemChina (and its subsidiaries) have developed rapidly through constant M&A of leading enterprises. Its affiliated company, China National Bluestar (Group) Co., Ltd. (Bluestar), was the most well-known one for overseas investments.

For long, China relied heavily on imported methionine (annual import volume stood at 120,000 tonne), since domestic production had been restrained by complicated technology. In light of this, in 2006, Bluestar purchased 100% of the shares in France-based Adisseo Group (Adisseo), the world's second largest methionine producer, takeover bid at around EUR400 million, the largest merger in France by Chinese enterprise so far. Following this acquisition, Bluestar introduced Adisseo's methionine production technology into China. To date, it has constructed a 140,000 t/a production unit in Nanjing City, Jiangsu Province.

That aside, Bluestar also acquired:

- **Qunos Pty Ltd.**(in 2006), Australia's exclusive manufacturer of polyethylene and a largest supplier of ethylene, which laid the basis for its new chemical material business
- **Organic silicon & sulfide business of France-based Rhodia Group** (in 2006), following which Bluestar became the third largest manufacturer of organic silicon monomer worldwide
- **Elkem AS**(in 2011), a leading producer of silicon products in the global market, valued at USD2.00 billion
- **REC Solar Holdings AS**(in 2014), the largest European producer of solar panels, valued at USD640.00 million

Notably, in 2011, ChemChina purchased a 60% stake in ADAMA Agricultural Solutions Ltd. (ADAMA), the world's seven largest pesticide manufacturer, and in 2015, bought Italian tyre maker Pirelli & C. S.p.A. at EUR7.10 billion. Than in Jan. 2016, it formed a consortium with Guoxin International Investment Corporation and AGIC Capital for acquisition of 100% shares in KraussMaffei Group, a global leading plastics and rubber processing machinery manufacturer, whose value stood at EUR925 million.

It is expected that ChemChina's transaction with Syngenta will be finalised in the not too distant future, given that ChemChina has garnered rich experience in M&A and that both parties showed strong inclination to make the deal. Currently, ChemChina is also processing the combination between ADAMA and Hubei Sanonda Co., Ltd. (Hubei Sanonda), a competitor of Syngenta in pesticide business. If the said two deals are done, there is possibility that Syngenta will be restructured with Hubei Sanonda.

Sanxia Paints: Ningxia Unisplendour acquisition plan passed

Summary: Sanxia Paints passed its Ningxia Unisplendour acquisition plan at the extraordinary shareholder meeting held on 5 Jan., 2017. One day prior to this meeting, the company received an inquiry from the SZSE concerning whether Ningxia Unisplendour brings about serious environmental pollution. In fact, Ningxia Unisplendour has invested a lot to upgrade facilities for production and pollutant treatment, as revealed by Sanxia Paints.

On 6 Jan., 2017, Chongqing Sanxia Paints Co., Ltd. (Sanxia Paints) convened the first 2017 extraordinary shareholder meeting, during which its plan to purchase 100% stake in Ningxia Unisplendour Tianhua Methionine Co., Ltd. (Ningxia Unisplendour) won 98%+ of the vote from minority shareholders. Such a wide approval suggested that this transaction is believed to be favourable for Sanxia Paints' future development.

It is notable that Chongqing Chemical & Pharmaceutical Holding (Group) Company (CCPHC), controlling shareholder of Sanxia Paints, withdrew from the voting, since it also holds a 45.21% stake in Ningxia Unisplendour's parent company, Chongqing Chemical & Pharmaceutical Unisplendour New Materials Co., Ltd. (Chongqing Unisplendour) – in other words, the purchase of Ningxia Unisplendour by Sanxia Paints is an affiliated transaction.

According to the acquisition plan, Sanxia Paints will offer a private placement of around 340 million shares to Chongqing Unisplendour, priced at USD1.30/share (RMB9.00/share). The deal is estimated to be made at USD440.30 million (RMB3.06 billion), slightly down over the previously announced USD445.05 million (RMB3.09 billion).

Sanxia Paints is likely to see soaring net profits after this merger. The acquisition plan revealed that Ningxia Unisplendour promised to realise a net profit with extra ordinary items deducted of ≥USD48.92 million (RMB340.00 million), USD54.68 million (RMB380.00 million) and USD59.71 million (RMB408.00 million) in 2017-2019 respectively, vs. Sanxia Paints' net profits with extra ordinary items deducted in 2013-2015 of USD4.35 million (RMB30.25 million), USD4.27 million (RMB29.70 million) and USD3.08 million (RMB21.40 million) separately.

Prior to the shareholder meeting, the Shenzhen Stock Exchange (SZSE) sent a second inquiry into Sanxia Paints' acquisition of Ningxia Unisplendour on 5 Jan., 2017, especially concerning the rumours about Ningxia Unisplendour's environmental pollution.

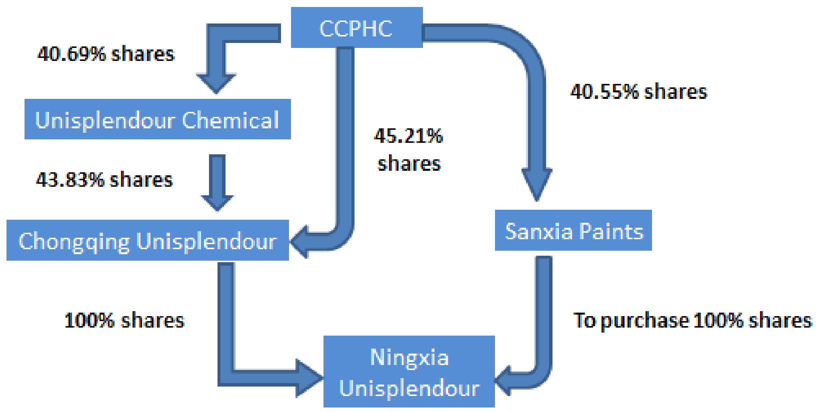
In March 2016, Ningxia Unisplendour was fined USD14,388 (RMB100,000) for illegal sludge placement. Yet, "This does not mean serious environmental pollution from production," replied Sanxia Paints on 10 Jan.

In fact, "Ningxia Unisplendour, partnering with China National Petroleum Corporation and the China Petroleum and Chemical Industry Federation, has formulated plan to make environmental rectification and invested nearly USD71.94 million (RMB500.00 million) to upgrade production technology," said Sanxia Paints.

Ningxia Unisplendour was actually derived from Chongqing Unisplendour. In 2009, Chongqing Unisplendour Chemical Co., Ltd. set up Chongqing Unisplendour for methionine production (designed production capacity: 60,000 t/a). Yet, the first phase of the project (10,000 t/a) brought about environmental pollution after put into production. Affected by this, the second phase (50,000 t/a) failed to pass environmental impact assessment. Later in 2012, Chongqing Unisplendour established Ningxia Unisplendour and transferred all the assets related to methionine production to the latter. Following this, Chongqing Unisplendour has stopped its methionine production since 2013.

Previously on 29 Sept., 2016, Sanxia Paints also received an inquiry into details of its asset restructuring and Ningxia Unisplendour's business performance.

Figure 5: Main enterprises involved in Sanxia Paints' acquisition of Ningxia Unisplendour



Note: CCPHC stands for Chongqing Chemical & Pharmaceutical Holding (Group) Company; Unisplendour Chemical stands for Chongqing Unisplendour Chemical Co., Ltd.; Chongqing Unisplendour stands for Chongqing Chemical & Pharmaceutical Unisplendour New Materials Co., Ltd.; Sanxia Paints stands for Chongqing Sanxia Paints Co., Ltd.; Ningxia Unisplendour stands for Ningxia Unisplendour Tianhua Methionine Co., Ltd.

Source: Chongqing Sanxia Paints Co., Ltd.

Zhejiang NHU diversifies business development

Summary: Zhejiang NHU announced the completion of trail-production for its new methionine project, indicating the company became the third methionine producer in China. Currently, Zhejiang NHU is extending into several new areas of business to boost profits. It is expected that methionine may become its main source of profits in the near future.

On 9 Jan., 2016, Zhejiang NHU Co., Ltd. (Zhejiang NHU) announced that its subsidiary, Shandong NHU Amino Acids Co., Ltd. (Shandong NHU), had finished pilot production of a methionine project on 6 Jan. (trail started in the end of June 2016). It was a great success for production route ran stably and products were qualified.

By then, Zhejiang NHU became the third domestic methionine manufacturer, following Ningxia Unisplendour Tianhua Methionine Co., Ltd. (Ningxia Unisplendour) and Bluestar Adisseo Company(Adisseo)'s Nanjing-based plant.

"After 10 years of R&D, we independently develop our methionine production technology and break the technological monopoly by foreign producers. Repeated trial and examinations turned it out that our technique is a practical method for production of quality methionine," disclosed Shi Guanqun, secretary to president of Zhejiang NHU.

The global methionine industry have so far been monopolised by several international giants, including Evonik Industries AG (580,000 t/a), Adisseo (410,000 t/a), Novus International, Inc. (280,000 t/a) and Sumitomo Chemical Co., Ltd. (160,000 t/a). In fact, China has relied heavily on imported methionine for long, since domestic production had been restrained by complicated technology. According to CCM's research, the present domestic demand for methionine stands at 220,000 t/a. Yet, in 2015, import volume reached 158,000 tonnes (only around 29% of methionine were supplier by domestic producers) and the figure in Jan.-Nov. 2016 grew by 9.29% YoY to 154,300 tonnes.

In light of this, increasing Chinese chemical enterprises have extended into methionine business in recent years. Zhejiang NHU is a typical example of this: it raised funds of ≤USD710.58 million (RMB4.90 billion) for its methionine projects, aiming to expand its production capacity to 300,000 t/a by 2020.

Secretary Shi Guanqun also mentioned: "The methionine project diversifies our existing product portfolio and extends our animal nutrition business."

It is expected that methionine may become a main source of profits for Zhejiang NHU. Wang Zhengjiang, president of Shandong NHU, disclosed: "We may generate a revenue of USD1.43 billion (RMB10 billion) from the methionine business."

"Domestic demand for methionine is likely to further grow in the future, especially from feed industry. At present, China's annual per capita consumption of chicken stands at 10 kg, vs. 42 kg in the US," said an industry insider.

At present, Zhejiang NHU is mainly engaged in the production and sales of vitamins as well as flavours & essences. The company is expected to achieve great financial growth in the whole of 2016. According to its financial pre-announcement for 2016, its full-year net profit is estimated to soar by 190%-220% to USD167.77 million -185.19 million (RMB1.17 billion-1.29 billion).

"This is mainly thanks to the surged sales prices of vitamins," explained Zhejiang NHU. According to CCM's price monitoring, in 2016, the domestic market price of 500,000 IU/g feed grade vitamin A averaged USD41,968/t, up by 131.85% YoY, and that of 50% feed grade vitamin E also up 66.52% YoY to USD12,832/t.

In order to diversify its business, Zhejiang NHU also set foot in new material market. In Aug. 2016, DSM NHU Engineering Plastics (Zhejiang) Co., Ltd., a joint venture established by Zhejiang NHU and DSM for polyphenylene sulfide (PPS) compounds, officially started up. Its products are targeted at automotive, electrical and electronics, water management and industrial markets.

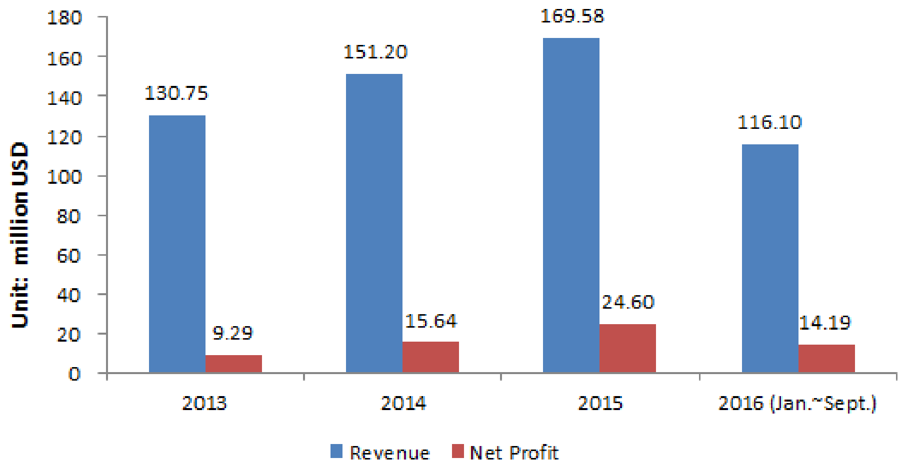
Glutathione manufacturer Jincheng Pharmaceutical extends into healthcare market

Summary: In Jan. 2017, Jincheng Pharmaceutical predicted stable profits in full-year 2016. This was mainly thanks to the growth in its main business, which eased the decrease in sales of glutathione related products. In light of weakening profits from glutathione API in recent years, the company extended into the healthcare product market which is promising but competitive as well.

On 13 Jan., 2017, Shandong Jincheng Pharmaceutical Co., Ltd. (Jincheng Pharmaceutical) released its financial pre-announcement for 2016. The full-year net profit is expected to reach USD20.91 million-28.29 million (RMB145.33 million-196.63 million), vs. USD24.60 million (RMB170.98 million) in 2015. Extraordinary items in 2016 may stand at USD2.08 million-2.81 million (RMB14.15 million-19.55 million).

"This year saw decrease in sales of biopharmaceuticals and special active pharmaceutical ingredients (APIs), but steady growth in other business," said the company.

Figure 6: Jincheng Pharmaceutical's financial performance, 2013-2015 & Jan.-Sept. 2016



Source: Shandong Jincheng Pharmaceutical Co., Ltd.

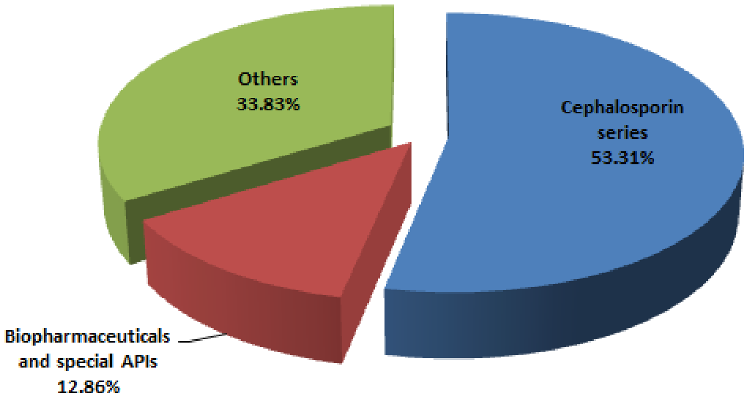
Jincheng Pharmaceutical's API & biopharmaceutical business mainly involves glutathione API and related healthcare products. In recent years, the company has increased investment in developing its glutathione API business and has so far grown into the largest domestic producer (260 t/a). Currently, only Jincheng Pharmaceutical and Zhejiang Hisun Pharmaceutical Co., Ltd. possess GMP (Good Manufacturing Practice) certificate for glutathione API. The latter focuses on anti-neoplastic and anti-infectious medicines, instead of glutathione API.

Jincheng Pharmaceutical offers glutathione API for preparation producers. Yet, the business has not performed well. In H1 2016, its revenue accounted for a mere 12.86% of the company's total, vs. 17.25% in 2015 and 19.23% in 2014.

In light of this, the company turned its eyes to the glutathione end market. In June 2016, Jincheng Pharmaceutical obtained a Health Food Approval Certificate for its Glutathione & Vitamin C+E Tablet (certificate No.: 2016B1051) from the China Food and Drug Administration (CFDA). This was its first healthcare product. "We are confident that this product will help us break into the healthcare market," said the company. Yet, performance of this glutathione healthcare product still remained to be seen given the short period it had been launched.

Glutathione healthcare product is expected to be of great market potential given its outstanding efficacy of anti-oxidation, immunity enhancement and liver protection. According to the CFDA, there were only 9 glutathione healthcare products approved to be sold in the Chinese market (as of Jan. 2017, including Jincheng Pharmaceutical's Glutathione & Vitamin C+E Tablet). However, the market competition is still intense given the large quantities of substitutes. For instance, there were 253 healthcare products specialised in anti-oxidation, not to mention the 2,900+ products for immunity enhancement. In this context, it may still take time for Jincheng Pharmaceutical to further extend into the healthcare market.

Figure 7: Jincheng Pharmaceutical's revenue by product, H1 2016



Source: Shandong Jincheng Pharmaceutical Co., Ltd.

Livzon increases investments in promising pharmaceutical projects

Summary: Livzon offered a private placement to raise funds for new ilaprazole, McAb (monoclonal antibody) and sustained release microsphere preparation projects. In H1 2016, the company realised significant financial growth. In particular, its sales of ilaprazole enteric-coated tablets surged by 70.19% YoY and that of phenylalanine increased by 27.19% YoY.

On 29 Dec., 2016, Livzon Pharmaceutical Group Inc. (Livzon) made an announcement on its allocation of funds raised from an A share private placement (launched on 20 Sept.) of 290.98 million shares, priced USD7.21/share (RMB50.10/share). In total, a sum of USD209.79 million – RMB1.46 billion (USD204.37 million – RMB1.42 billion, after issuing expenses were deducted) was raised. Of this, a total of USD52.98 million (RMB368 million) were invested into pharmaceutical projects, with USD151.39 million (RMB1.05 billion) remained as of 30 Nov.

Notably, prior to this placement, Livzon had already invested USD6.02 million – RMB41.86 million (2.87% of the raised funds) of self-owned capital into the production projects in advance, indicating the company's substantial working capital. Its H1 2016 financial report showed that, as of 30 June 2016, its monetary capital reached USD136.69 million (RMB905 million), vs. USD113.67 million (RMB790 million) as of 31 Dec., 2015. "These assets are mainly come from bill financing activities and short-term bank loans," disclosed the company.

Livzon has been in rapid development in recent years. In H1 2016, it achieved:

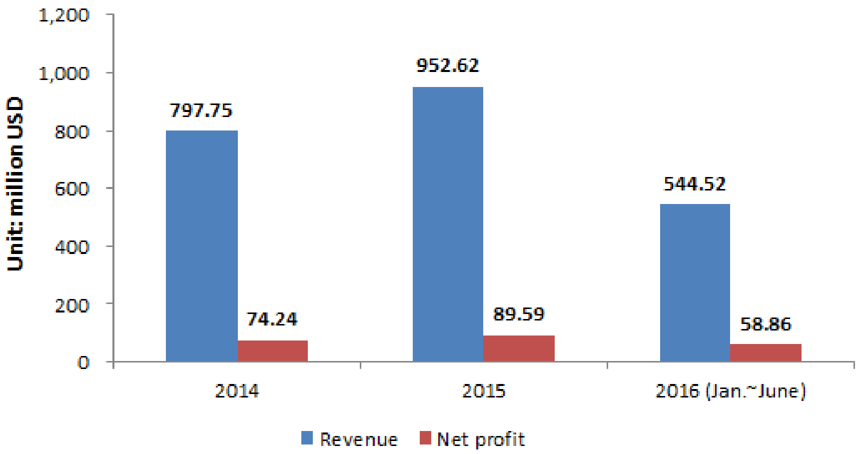
- Revenue: USD554.52 million (RMB3.78 billion), up 21.47% YoY
- Net profit: USD58.68 million (RMB409.06 million), up 20.01% YoY

Besides, its full-year 2016 net profit is estimated to reached USD107.49 million-116.41million (RMB747.17 million-809.43 million), up 20%-30% YoY, according to the company's financial pre-announcement for 2016 released on 13 Jan., 2017.

Livzon is mainly engaged in the production and sales of chemical pharmaceutical preparations, Chinese traditional medicines, active pharmaceutical ingredients (APIs) and pharmaceutical intermediates. Of these, chemical pharmaceutical preparations, APIs and pharmaceutical intermediates are important contributors to its total revenue. In H1 2016,

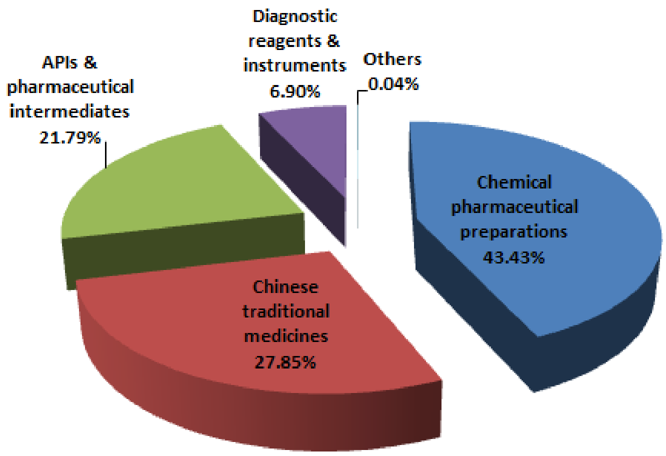
- **Chemical pharmaceutical preparation**: USD235.61 million (RMB1.64 million), up 34.37% YoY. Increases were seen in preparations like ilaprazole enteric-coated tablets and urofollitropin for injection (drug for reproductive health)
- **API & pharmaceutical intermediate**: USD118.21 million (RMB822 million), up 18.59% YoY. Especially, figure of phenylalanine increased by 27.19% YoY to USD16.54 million (RMB115 million)

Figure 8: Livzon's financial performance, 2014-2015 & H1 2016



Source: Livzon Pharmaceutical Group Inc.

Figure 9: Livzon's revenue by product, H1 2016



Source: Livzon Pharmaceutical Group Inc.

Livzon mainly invested the funds raised from private placement into three promising pharmaceuticals, including:

- **Ilaprazole**, a drug used in treatment of chronic duodenal ulcer. Ilaprazole enteric-coated tablets recorded the most significant financial growth – revenue reached USD20.43 million (RMB142 million), up 70.19% YoY
- **McAb (monoclonal antibody)**is highly profitable. Its sales in the Chinese market is expected to achieve USD2.88 billion (RMB20 billion) by 2020, vs. USD1.01 billion (RMB7 billion) in 2015
- **Sustained release microsphere preparations**, which has been widely used in treatment of chronic diseases in recent years. Yet, its domestic sales account for a mere 1.40% of the global total

As production of these promising products is expanded, Livzon is expected to take up larger shares in the market.

Price Update

Market prices of major amino acids in China, Jan. 2017

Table 3: Market prices of major amino acids in China, Jan. 2017

Product	Price in Jan. 2017, USD/t	Price in Dec. 2016, USD/t	MoM change
98.5% Lysine	1,536	1,813	-15.29%
70% Lysine	1,073	1,188	-9.68%
98% Tryptophan	10,792	10,441	+3.36%
Imported methionine (liquid)	3,741	3,770	-0.78%
Methionine (solid)	3,744	3,807	-1.65%
99% Threonine	1,655	1,664	-0.53%

Source: CCM

China's lysine price slumps in Jan. 2017

Summary: Lysine price in the Chinese market started to decline in Jan. 2017, after its record high in Dec. 2016. This was mainly a result of the relived transportation pressure and flat sales before the arrival of the Spring Festival. CCM predicted that further slumps may be seen after the holiday.

China's lysine price slumped in early 2017, after hitting a record high in Dec. 2016. According to CCM's price monitoring, the market price of 98.5% lysine averaged USD1,619/t (RMB11,250/t), down 10.70% MoM and that of 70% lysine also down by 15.24% MoM to USD1,007/t (RMB7,000/t).

This decline was mainly ascribed to the following factors:

1. Relieved transportation pressure

In late Q4 2016, transportation pressure was intensified affected by the delivery of coals and new corn as well as carrying capacity limits prescribed by the newly released traffic rules. This raised transportation costs for lysine and, in turn, pushed up its price.

In light of the intense pressure, the state carried out a series of measures, such as arranging special trains for corn delivery. Therefore, the heavy pressure was eased in early 2017, which reduced transportation costs for lysine and its price thus fell down.

2. Flat sales

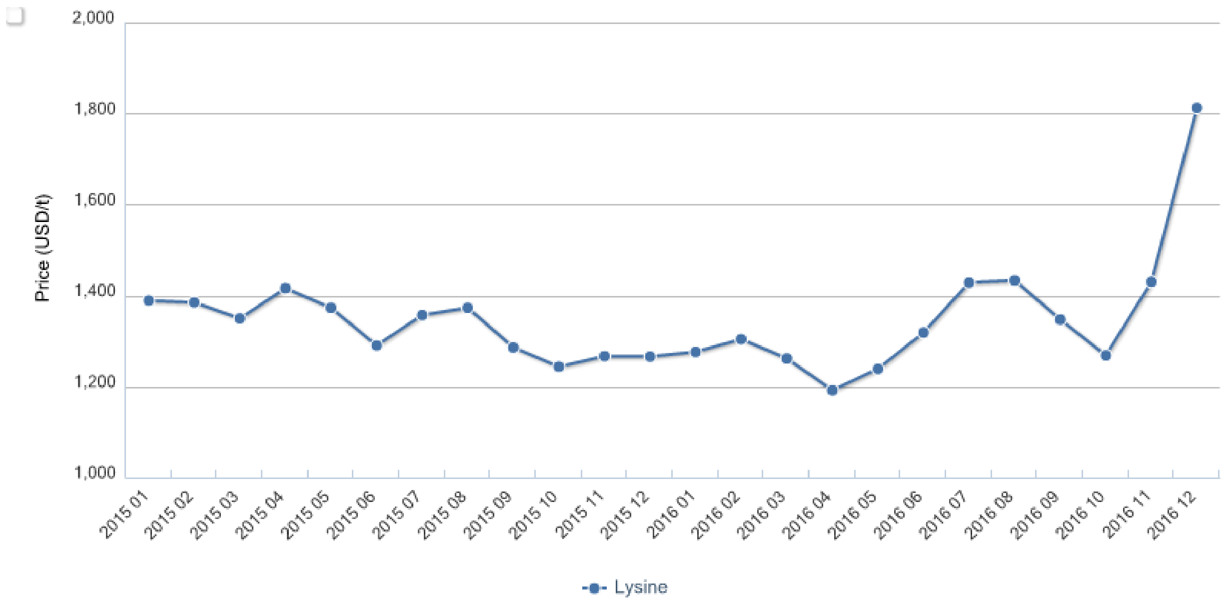
As the Spring Festival (late Jan. to early Feb. 2017) approached, most domestic feed enterprises would stockpile raw materials like lysine. This boosted sales in Dec. 2016. Yet, these purchasers finished replenishing inventories in mid-Jan. 2017, as a result of which demand for lysine became weak. Meanwhile, many distributors lowered their prices to boost sales before the Spring Festival, further pulling down the market price.

3. Increased demand for poultry and livestock

The arrival of the Spring Festival pushed up demand for poultry and livestock products and further, their sales. With less poultry and livestock on farm, demand for feed turned weak.

All these factors may continue to influence the lysine market in the short term. Therefore, the domestic lysine price is expected to further decline after the Spring Festival.

Figure 10: Monthly market price of 98.5% lysine in China, Jan. 2015-Jan. 2017 (as of 17 Jan.)



Source: CCM

First drop in pig feed price in 2017

Summary: Chinese feed enterprises should have cut feed prices at the end of 2016, but they delayed quotations until early 2017, in order to use up the corn stockpile that was purchased at high price, and improve their 2016 financial figures. It is predicted that feed price will drop once again if raw material prices continue to decrease.

Since 5 Jan., 2017, some Chinese leading pig feed companies announced to reduce feed prices by USD7.19/t-USD14.39/t (RMB50//t-RMB100/t):

TRS Group Co., Ltd.

- Feed concentrate, piglet feed, and complete feed reduced by USD10.79/t (RMB75/t)

Twins Group Co., Ltd.

- All kinds feed for piglet, suckling pig, pregnant sow, and nursing sow reduced by USD10.79/t (RMB75/t); feed for middle-sized pig and big pig reduced by USD7.19/t (RMB50/t)

Guangdong Haid Group Co., Ltd.

- Anthony pig feed reduced by USD10.79/t (RMB75/t)
- Feed for middle-sized pig, big pig, pregnant sow and nursing sow reduced by USD7.19/t (RMB50/t)
- No price adjustment for piglet feed

Guangdong Huihai Agricultural and Animal Husbandry Science and Technology Group Co., Ltd.

- Creep feed (brand: Aiduoduo) reduced by USD10.79/t (RMB75/t)

- Pig feed (brand: Chiduoduo, Zhuangduoduo, Meiduoduo) reduced by USD7.19/t (RMB50/t)
- Other pig feed reduced by USD7.19/t (RMB50/t)

At the end of Dec. 2016, quotations for corn in northern ports declined to below USD230.22/t (RMB1,600/t) because corn supply in northern China increased by the accelerated transportation in Northeast China. Industry insider predicted that if corn price or soybean meal price reduced by USD14.39/t (RMB100/t) and USD43.17/t (RMB300/t) respectively, feed companies may have room for price cuts.

However, feed companies did not cut prices until Jan. 2017, mainly because:

1. In Dec. 2016, some feed companies cut or suspended production since the environmental inspection team was stationed in Guangdong Province. Some of them even suspended production for half a month. For this reason, companies' corn stockpile had not been consumed. Besides, the domestic corn price kept falling, so the price of corn stockpile was higher than the market price. As a result, feed companies wanted to use up the stockpile before cutting the price.

2. In order to improve 2016 financial figures, some listed feed companies delayed the price cuts until 2017.

In recent years, China's information of feed raw materials became very transparent. Price changes were clear to farmers and distributors. Some companies disclosed that, due to price transparency, feed companies will cut price as soon as raw material prices decline; if they do not cut their price, farmers and distributors will be discontent. If so, other companies may take the opportunity to "grab" the customers, which may lead to huge losses.

At present, corn is continuously being transported from Northeast China to southern China. As of early Jan. 2017, corn inventory still kept climbing up in Guangdong ports, being 1.07 million tonnes, hitting a record high since 2010. In addition, the high soybean meal price due to environmental pressure had fell back, and prices of various kinds of feed additives maintained stable, especially 98.5% lysine – down to about USD1,618.75/t on 17 Jan., 2017 from USD1,812.70/t in Dec. 2016. It is predicted that if raw material prices keeps declining, feed price may drop again in the future.

Import & Export Analysis

Imports & exports of selected amino acids in China, Dec. 2016

Table 4: Imports & exports of selected amino acids in China, Dec. 2016

Product	Import volume, tonne	MoM change	Import value, USD	MoM change
Lysine	522.747	/	786,870	/
Lysine ester and salt	169.102	+64.86%	326,397	+51.87%
Methionine	13,254.290	+3.71%	33,445,649	-4.11%
Glutamic acid	0.479	-56.69%	7,378	-64.40%
Cystine	15.901	+15,801.00%	118,055	+6,646.00%
Product	**Export volume, tonne**	**MoM change**	**Export value, USD**	**MoM change**
Lysine	7.125	-64.60%	47,964	-66.07%
Lysine ester and salt	25,097.300	-20.85%	25,874,481	-23.55%
Methionine	4,321.217	-24.54%	12,602,177	-25.90%
Glutamic acid	4,384.992	+24.99%	4,607,480	+20.01%
Cystine	26.320	+1.50%	379,672	+7.47%

Source: China Customs

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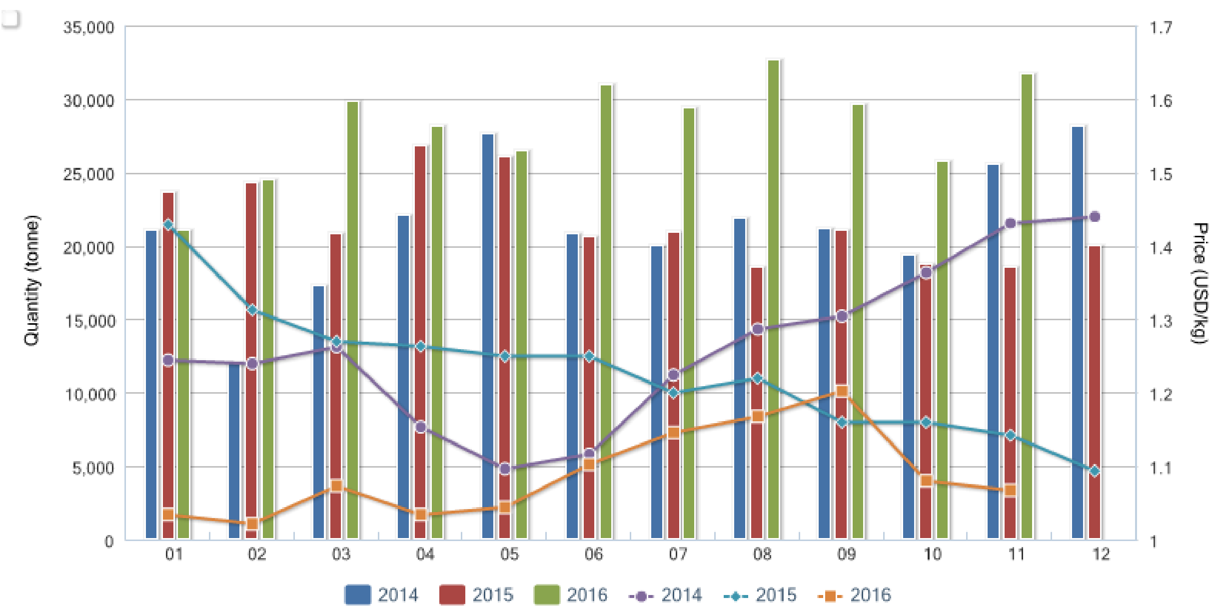
China's exports of lysine ester and salt keeps increasing

Summary: In Nov. 2016, the export volume of lysine ester and salt from China rose by 70.86% YoY, thanks to the serious overcapacity in domestic market, low export price and continual RMB depreciation. European countries were the main export destinations between Jan. and Nov. Particularly, the export volume to the Netherlands increased by 71.36% YoY. Yet, as domestic market price rebounded in Q4 2016, exports of lysine ester and salt are likely to be impacted over the coming period.

In Nov. 2016, China's exports of lysine ester and salt kept going up. According to China Customs, altogether 31,709 tonnes of lysine ester & salt were exported from China in Nov. 2016, up 23.02% MoM and up 70.96% YoY. The total export volume between Jan. and Nov. reached 310,075 tonnes, up 29.12% YoY.

Currently, the Chinese lysine market was in serious overcapacity – domestic production capacity stands at 2.2 million tonnes (65%+ of the global total), vs. annual domestic demand of around 700,000 tonnes. The top four producers, Global Bio-Chem Technology Group Co., Ltd., Meihua Holdings Group Co., Ltd., Ningxia EPPEN Biotech Co., Ltd. and CJ (Shenyang) Biotechnology Co., Ltd., account for 50%+ of the domestic capacity. In this context, it is of urgent need to expand exports of lysine and lysine ester & salt from China.

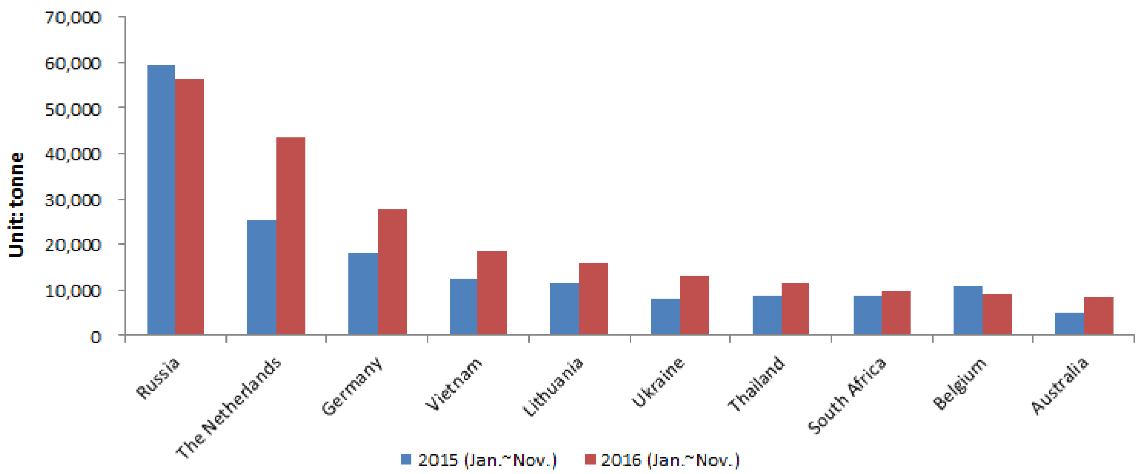
Figure 11: China's exports of lysine ester and salt (HS code: 29224190), Jan. 2014-Nov. 2016



Source: China Customs

Europe has been the leading export destination of lysine ester and salt from China. In Jan-Nov., 2016, five of the top 10 export destinations (by volume) were in European countries / regions, whose combined export volume reached 409,534 tonnes, 35.33% of the national total. In particular, the Netherlands recorded the largest growth compared with the same period of 2015. According to China Customs, the export volume to the Netherlands amounted to 43,587 tonnes, up 71.36% YoY. Besides, Russia continue to head the export destinations. Despite a slight fall of 5.56% YoY, its import volume still reached 56,219 tonnes, 18.13% of China's total.

Figure 12: China's exports of lysine ester and salt (by export destination), Jan.-Nov. 2015 & Jan.-Nov. 2016



Source: China Customs

According to CCM's research, continual increases in exports of lysine ester and salt from China were related to:

1. **Low export price**: in Nov. 2016, the export price of lysine ester and salt decreased by 25.41% YoY to USD1,067/t, and the average figure over Jan.-Nov. down 11.64% YoY to USD1,093/t.

2. **RMB depreciation**: according to the People's Bank of China, the USD/RMB exchange rate was 1:6.7734 on 1 Nov., vs. 1:6.3154 in Nov. 2015

Given these factors, it is expected that the export volume of lysine ester and salt would hit a new high in the whole of 2016. Yet, affected by the surged domestic lysine price, the export price may increase in Q1 2017 (in general, impact from domestic market on exports would be 1-2 months later). Affected by this, coupled with the arrival of the Spring Festival (late Jan. to early Feb. 2017, during which most producers would suspend production), export volume of lysine ester & salt is likely to stay stable or even fall slight over the coming period.

News in Brief

Adisseo develops brand new solid methionine

On 13 Jan., 2017, Bluestar Adisseo Co., Ltd. (Adisseo) announced that it had developed a brand new solid methionine, Rhodimet® A-Dry+.

"This innovative product (premium quality powder at 88% potency) is created based on our liquid methionine production technology and with the support of or formulation expert subsidiary. Additional benefits such as improved anti-oxidation and anti-microbial effects will also be available to users," introduced Adisseo.

Rhodimet® A-Dry+ is expected to be launched in the market early 2018. Currently, a new production unit for this methionine is being built in Burgos, Spain, and expected to be put into production in late 2017.

China cancels exit inspection and quarantine for methionine

On 27 Dec., 2017, the General Administration of Quality Supervision, Inspection and Quarantine and China Customs jointly released the *Announcement No.131 [2016]*, which adjusted regulations on some of the products listed on the *Catalogue of Imported and Exported Commodities required Entry-exit Inspection and Quarantine*.

Notably, exit inspection and quarantine were cancalled for 17 products, including sodium glutamate and methionine (regulation codes changed from "A/B" to "A/", meaning only entry inspection and quarantine are required afterwards).

BBCA Group expands amino acid production

On 10 Jan., 2017, China BBCA Group Corp. (BBCA Group) released the environmental impact assessment results of its 300,000 t/a amino acid production project. With a total investment of USD220.97 million (RMB1.54 billion), the project would be divided into two phases:

- Phase I: 100,000 t/a lysine (construction planned to be completed by 2017)
- Phase II: 100,000 t/a lysine + 100,000 t/a threonine

BBCA Group is mainly engaged in the production and sales of vitamins, organic acids, amino acids, and active pharmaceutical ingredients (APIs). It has so far established 18 subsidiaries, such as Anhui BBCA Biotech Co., Ltd., whose offerings include L-tryptophan and L-glutamic acid, and Anhui BBCA Pharmaceutical Co., Ltd. (BBCA Pharmaceutical), a producer of compound amino acid injections and APIs. Particularly, BBCA Pharmaceutical got listed on A share market in 2000. In H1 2016, its revenue reached USD128.26 million (RMB891.41 million), up 13.19% YoY, and the corresponding net profit stood at USD3.78 million (RMB26.30 million), up 29.20%

Meihua Bio predicts +120%-150% YoY in 2016 net profit

Meihua Holdings Group Co., Ltd. (Meihua Bio) released a forecast of 2016 financial performance. The company predicted that its 2016 net profit will rise by 120%-150% over the USD6.12 million (RMB42.55 million) in 2015.

The rising net profit was mainly thanks to Meihua Bio's measures as follows:

- Improved operation efficiency and profitability
- Actively cultivated multilevel suppliers according to demand & supply relation and government policies, and greatly reduced corn purchasing cost via corn import application
- Significantly reduced financial expenses by decreasing interest cost (RMB depreciation also took effect)

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