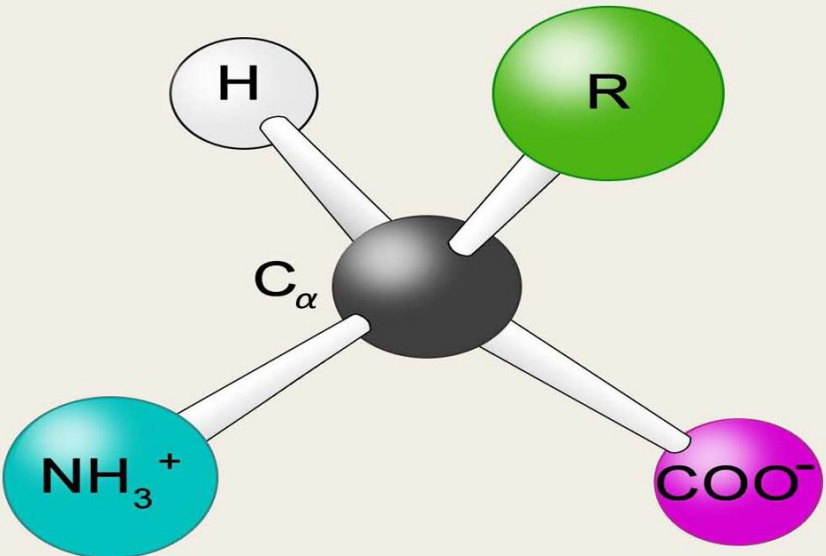


Amino Acids China E-News 202403

Issue 3 March 29 2024





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Headline

In March, CFSA started the solicitation of public opinions on seven new food additives including hydroxytyrosol; additionally, the national standard Determination of lysine, methionine and threonine in commercial amino acid products and additive premixture feeds formally went into force.

CJ Shenyang's arginine project and Quanzhou Adisseo's solid methionine project entered the approval process. Newly-proposed amino acid projects of Dongxiao Biotech and Ningxia Unisplendour were disclosed.

Due to the price drop of main products like amino acids, Meihua Group's net profit for 2023 showed a significant YoY decline. However, the increase in sales volume of its xanthan gum and small-variety amino acids helped its operating revenue remain stable.

China Starch's revenue for 2023 sank by 1.27% YoY, and its revenue from lysine products dipped by 6.72% YoY.

In late Feb., Zhenyuan Share revealed its plan to issue shares to specific subscribers, a bid to raise funds for amino acid and API projects.

In early March, Huaheng Biotech disclosed its plan to invest in "alternate production project of 60,000 t/a three branched-chain amino acids and tryptophan, as well as 10,000 t/a refined amino acids". Ouhe Biotech's technologies of arginine production via biological method will be licensed to Huaheng Biotech.

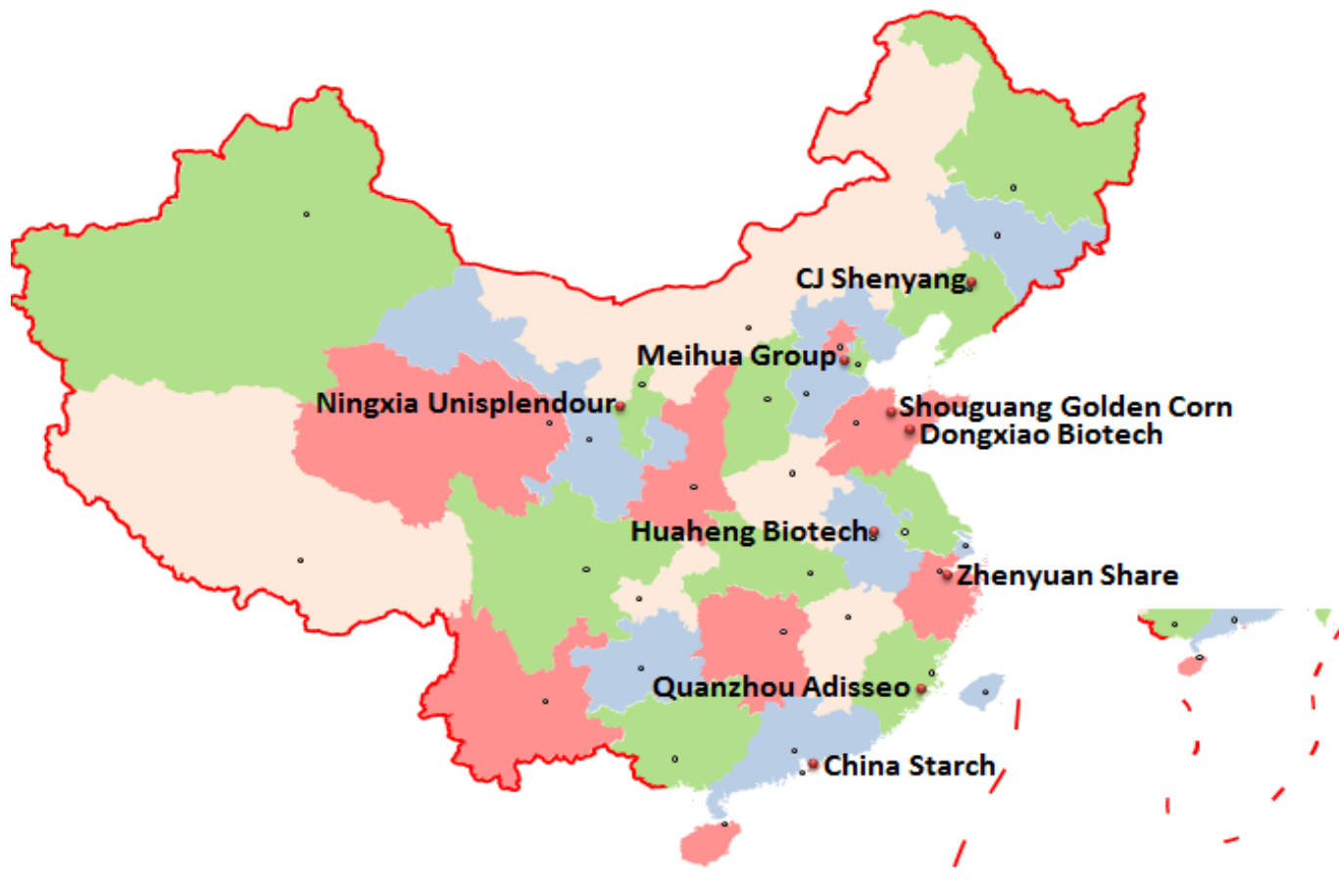
Tongliao Meihua plans to introduce 6,500 t/a of production capacity for isoleucine.

Recently, Shouguang Golden Corn introduced 110,000 t/a of lysine capacity, and Hangzhou Hetai added 500 t/a of arginine capacity.

In March, major amino acid products witnessed varied price trends. Methionine price remained stable, lysine price rebounded, while the prices of threonine and tryptophan fell.

In Jan.–Feb. 2024, China's methionine import volume dipped by 13.90% YoY, which suggests the country is lessening its reliance on methionine imports. In the same period, the country's methionine export volume surged by 103.10% YoY.







Editor's Note

Welcome to the March issue of Amino Acids China E-News.

Two listed amino acid producers issued 2023 performance report:

- Meihua Group reported a decline in net profit for 2023, citing price drop of lysine and other products.
- China Starch's revenue for 2023 sank by 1.27% YoY, and its revenue from lysine products dipped by 6.72% YoY.

The information of several companies' amino acid projects is being published:

- Zhenyuan Share intends to issue shares to specific subscribers to raise funds. The proceeds will be mainly used in two projects that involve histidine, tyrosine, S-(5'-Adenosyl)-L-methionine p-toluenesulfonate salt, etc.
- Huaheng Biotech intends to build "alternate production project of 60,000 t/a three branched-chain amino acids and tryptophan, as well as 10,000 t/a refined amino acids". The project's EIA info is being published for the first time.
- EI report of Tongliao Meihua's isoleucine project is being published.
- The report of monitoring results of post-completion EP acceptance inspection on Shouguang Golden Corn's "corn deep processing industry chain project—Phase II of lysine production line project" is being published.
- EI report of CJ Shenyang's "arginine expansion construction project" was published and will be approved.
- EI report of Quanzhou Adisseo's "150,000 t/a solid methionine project" was approved.
- EI report (draft for soliciting public opinions) of Dongxiao Biotech's "reconstruction project for high-quality amino acids" is being published.

Governmental Direction: CFSA started the solicitation of public opinions on seven new food additives including hydroxytyrosol; additionally, the national standard *Determination of lysine, methionine and threonine in commercial amino acid products and additive premixture feeds* formally went into force.

Price: In March, major amino acid products witnessed varied price trends. Methionine price remained stable, lysine prices rebounded, while the prices of threonine and tryptophan fell.

Import and Export: In Jan.–Feb. 2024, China's methionine import volume dipped by 13.90% YoY, which suggests the country is lessening its reliance on methionine imports. In the same period, the country's methionine export volume surged by 103.10% YoY.

Reminders:

1. The USD/CNY exchange rate in this newsletter is USD1.00=CNY7.1059, which was sourced from the People's Bank of China on 1 March, 2024. All the prices mentioned in this newsletter will include the VAT, unless otherwise specified.
2. In this newsletter, the variance rates (MoM, QoQ, YoY, etc.) of all figures that involve RMB/USD conversion (prices, sales values, costs, etc.) are calculated with pre-conversion RMB prices/values, except for the figures in Import and Export column.





Governmental Direction

CFSA soliciting comments on hydroxytyrosol as new food additive; new national standard comes into force

Summary: In March, CFSA started the solicitation of public opinions on seven new food additives including hydroxytyrosol; additionally, the national standard *Determination of lysine, methionine and threonine in commercial amino acid products and additive premixture feeds* formally went into force.

On 13 March, China National Centre for Food Safety Risk Assessment (CFSA) started the solicitation of public opinions on seven new food additives including hydroxytyrosol, which had passed the technical review by the expert review committee. Technical criteria for product quality are also found in disclosed information from CFSA.

New food additive hydroxytyrosol

According to the application info from CFSA, this new food additive, hydroxytyrosol, is intended for the use in vegetable oils (food category 02.01.01), a usage already permitted by the US Food and Drug Administration and the European Commission.

- Scope of application: The quality criteria for food additive hydroxytyrosol, disclosed by CFSA, apply to the hydroxytyrosol that is produced by using tyrosine as raw material and conducting the fermentation broth culture using *Corynebacterium glutamicum*, catalytic conversion, separation, purification, etc.
- Technical necessity: As an antioxidant, hydroxytyrosol is used in vegetable oils (food category 02.01.01) to delay their oxidation.
- Maximum usage (g/kg): 0.05



TABLE 1: Technical criteria for hydroxytyrosol

Item		Criterion
Sensory requirement	Colour	Pale yellow
	Form	Sticky liquid
	Smell	Spicy, slightly bitter
Physicochemical index	Hydroxytyrosol content, ω/%	≥ 99.0
	Water content, ω/%	≤ 1.6
	Lead (Pb)/(mg/kg)	< 0.05
	Total arsenic (measured by As)/(mg/kg)	< 0.05
	Total mercury (measured by Hg)/(mg/kg)	< 0.05
	Cadmium (Cd)/(mg/kg)	< 0.05
Microbe index	Total bacterial count/(CFU/g)	< 1,000
	Molds & <i>Saccharomyces</i> /(CFU/g)	< 10.0
	<i>Coliforms</i> count/(MPN/g)	< 0.3
	<i>Staphylococcus aureus</i> /25g	Shall not be detected
	<i>Salmonella</i> /25g	Shall not be detected

Source:CFSA

On 1 March, the national standard *Determination of lysine, methionine and threonine in commercial amino acid products and additive premixture feeds* formally went into force.

Determination of lysine, methionine and threonine in commercial amino acid products and additive premixture feeds (GB/T 42957-2023)

- This standard is revised from an international standard, *Animal feeding stuffs—Determination of lysine, methionine and threonine in commercial amino acid products and premixtures, MOD* (ISO 17180:2013).
- Scope of application:
 - The standard is suitable for the determination of content of free lysine, methionine, and threonine in amino acid feed additives, amino acid sulphates, amino acid hydrochlorides, mixed feed additives, and premixed feeds.
 - The standard is not suitable for the determination of content of bound lysine in feed additives including methionine hydroxy analogues, calcium salts of methionine hydroxy analogues, lysine sulphate and its fermentation by-products.
 - The standard is not suitable for distinguishing between the D-form and L-form of individual amino acids.
- Matter(s) needing attention: In this standard, the quantitation limit of free lysine, methionine and threonine is 0.1%.
- Determination principle: The free lysine, methionine, and threonine in the sample are extracted through dilute hydrochloric acid, and



are diluted by a sodium citrate buffer solution. Next, the D-Norleucine is added, used as an internal standard. The separation is carried out by using an amino acid analyser (or high-performance liquid chromatography) and a cation exchange chromatography column. The elution is then conducted by using a sodium citrate buffer solution. Eventually, the free lysine, methionine, and threonine are determined using either a ninhydrin post-column derivatisation violet spectrophotometric detector or an o-Phthalaldehyde post-column derivatisation fluorescence detector.





Market Analysis

Update on four amino acid projects

Summary: CJ Shenyang's arginine project and Quanzhou Adisseo's solid methionine project entered the approval process. Newly-proposed amino acid projects of Dongxiao Biotech and Ningxia Unisplendour were disclosed.

From late Feb. to March, amino acid projects of four enterprises made progress.

CJ (Shenyang) Biotech Co., Ltd. (CJ Shenyang)

On 13 March, the local environmental authority said the environmental impact (EI) report of CJ Shenyang's "arginine expansion construction project" would be approved; also, the EI report was published.

Budgeted at USD84,437 (RMB600,000), the project is located in Shenbei New Area, Shenyang City, Liaoning Province. Since the production line equipment is not operating at full capacity during arginine production on the existing lysine line, the company has initiated this project. Upon completion, CJ Shenyang's production capacity for arginine will be expanded from 15,000 t/a to 60,000 t/a.

The arginine production of this project will use glucose, potassium hydroxide, ammonium sulphate and water as the major raw materials. The steps in arginine production process will include raw materials proportioning, bacterial strain culture, main fermentation culture, fermented broth reception, centrifugal separation, resin separation (for preparing ammonia water), concentration, decolourisation, filter press, crystallisation, drying and packaging.

Sinochem Bluestar Adisseo Animal Nutrition Technology (Quanzhou) Co., Ltd. (Quanzhou Adisseo)

On 6 March, the EI report of Quanzhou Adisseo's "150,000 t/a solid methionine project" was approved by local environmental authority.

USD694.11 million (RMB4.93 billion) are to be invested in this project, which is situated in Quanhui Petrochemical Industrial Park, Quanzhou City, Fujian Province. After construction is completed, the project will deliver 150,000 t/a of capacity for solid methionine, applying hydantoin method in production.

To date, land acquisition for this project has been completed. Project construction is expected to start in April 2024 and be completed in Feb. 2027. The "150,000 t/a solid methionine project" will only start operating after Sinochem Environment Holdings Co., Ltd.'s "340,000 t/a sulphuric acid (Phase I) project" comes on stream, as this solid methionine project depends on the latter for its operation.

Dongxiao Biotechnology Co., Ltd. (Dongxiao Biotech)

On 21 Feb., the EI report (draft for soliciting public opinions) of Dongxiao Biotech's "reconstruction project for high-quality amino acids" was published.

Project overview





- Type of project: reconstruction and expansion
- Investment amount: USD14.78 million (RMB105.00 million)
- Construction site location: Zhudi Industrial Zone, Zhudi District, Xinxing Town, Zhucheng City, Shandong Province
- Construction details: The original fermentation workshop and extraction workshop in the "30,000 t/a high-end erythritol project" will be reconstructed into fermentation workshop and drying workshop for this "high-end amino acids project". 200 (sets of) existing devices, such as fermenter and evaporator, will be utilised in the project production. 207 (sets of) new devices will be introduced, including granulation bed, sieve for final products, fully automatic packaging machine, etc.
- Production process and planned capacities: The bacterial strain used in fermentation will be changed. The project production will apply the aerobic fermentation technology and use glucose as a raw material to produce L-Lysine sulphate. Upon completion, the project will enable Dongxiao Biotech to have the capacities of 120,000 t/a for L-Lysine sulphate and 30,000 t/a for high-end erythritol, but the company will switch between these two products in production (rather than two products being produced simultaneously).

Ningxia Unisplendour Tianhua Methionine Co., Ltd. (Ningxia Unisplendour)

On 6 March, the environmental impact assessment information of Ningxia Unisplendour's "project on tackling key R&D challenges in new methionine production process during pilot-scale experiment, and industrialisation demonstration" was published for the first time.

Ningxia Unisplendour will spend USD17.48 million (RMB124.22 million) in this new construction project, which is located in Zhongwei Industrial Park, Zhongwei City, Ningxia Hui Autonomous Region. Construction items include production unit devices, warehousing and shipping facilities, utilities, supporting production units and supporting facilities for the whole factory. The project will deliver 10,000 t/a of production capacity for methionine after it is completed and put into operation.

Meihua Group's 2023 revenue remains stable

Summary: Due to the price drop of main products like amino acids, Meihua Group's net profit for 2023 showed a significant YoY decline. However, the increase in sales volume of its xanthan gum and small-variety amino acids helped its operating revenue remain stable.

On 18 March, Meihua Holdings Group Co., Ltd. (Meihua Group, stock code: 600873.SH) released the 2023 annual report, which shows its operating revenue for 2023 was basically the same as that for 2022.

Key financial metrics of Meihua Group for 2023

- Operating revenue: USD3.91 billion (RMB27.76 billion), down 0.63% YoY;
- Net profit attributable to shareholders: USD447.65 million (RMB3.18 billion), down 27.81% YoY;
- Net profit attributable to shareholders excl. extraordinary items: USD433.98 million (RMB3.08 billion), down 26.93% YoY.

Meihua Group said the decline in net profit was mainly attributed to the price drop of main products, but having a diversified product portfolio helped its operating revenue remain stable:

- In 2023, the sales volume of lysine hydrochloride (98% lysine), lysine sulphate (70% lysine) and threonine climbed up by 6.91%, 3.93% and 24.33% YoY respectively, but the selling price of these three products dipped by 16.75%, 10.41% and 5.25% YoY respectively.
- Despite the price drop of aforementioned products, the price of xanthan gum and small-variety amino acids was buoyed in the year. Sales volume of xanthan gum increased by 26.86% YoY and average selling price thereof ascended by 5.85% YoY. Sales volume





of two pharmaceutical-grade amino acids, glutamine and proline, went up by 12.74% and 13.40% YoY respectively. Sales volume of valine grew by 31.69% YoY.

As for the R&D of production processes, Meihua Group's expenditures on R&D in 2023 reached USD44.22 million (RMB314.22 million), up 12.35% YoY. The new bacterial strain for glutamic acid, new anaerobic bacterial strain for valine and new bacterial strain for glutamine, as well as new production processes for lysine and threonine were successfully put into use in 2023, which enabled Meihua Group to have a new annualised benefit of nearly USD28.15 million (RMB200.00 million). The in-house developed new bacterial strain for glutamic acid allows the unit production costs of glutamic acid to reduce by nearly USD14.07 (RMB100). The valine anaerobic fermentation technology, which was developed in tandem by Meihua Group and an external research institute, greatly improves the metabolic efficiency of microbial bacterial strains and streamlines the production process. In the reporting period, Meihua Group obtained 11 new patents.

As for the capacity expansion, several new projects went into production in the reporting period, which laid a foundation of the growth in Meihua Group's sales volume.

- The 20,000 t/a xanthan gum project in Jilin base entered equipment commissioning in March 2023 and reached full operation in June 2023.
- The 250,000 t/a threonine project in Tongliao base fulfilled designed production capacity in July 2023.
- The technical renovation project for the production conversion from threonine to valine in Tongliao base reached full operation in Q4 2023, delivering 21,811 t/a of capacity for feed-grade valine.

Meihua Group plans to keep expanding its capacity in 2024 and move forward with the construction of following projects:

- The 500,000 t/a gourmet powder monosodium glutamate (MSG) new construction project in Tongliao base, which was filed for record, has been budgeted at USD240.48 million (RMB1.71 billion), and has been scheduled to be built in the period from March 2024 to Dec. 2025.
- The isoleucine technical renovation project in Xinjiang base was also revealed, but the project details have not yet been disclosed.
- The 600,000 t/a amino acids and supporting (facilities) project in Jilin base ("Meihua Head Economy Industrial Park") is slated to commence construction in April 2024.





TABLE 2: Revenue breakdown of Meihua Group's main businesses in 2023

Product	Operating revenue		Gross profit margin	
	Value, million USD	YoY variance	Value	YoY variance
Animal nutrition amino acid products (lysine, threonine, tryptophan, feed-grade valine, glutamic acid residue, feed fibre (starch by-product), corn germ, bacterial protein, etc.)	2,046.10	-2.46%	12.22%	Down 10.98 percentage points
Food flavour enhancing products (glutamic acid, MSG, disodium 5'-ribonucleotide, disodium 5'-inosinate, food-grade xanthan gum, trehalose, pimaricin, etc.)	1,383.68	-2.64%	22.93%	Up 1.25 percentage points
Amino acids for human pharmaceutical use (glutamine, proline, leucine, isoleucine, pharma-grade valine, inosine, guanosine, adenosine, pullulan, vitamin B2, etc.)	79.18	2.25%	27.25%	Down 6.56 percentage points
Others (petroleum-grade xanthan gum, biological organic fertilisers, etc.)	352.41	14.46%	48.83%	Down 3.52 percentage points

Source: Meihua Group

China Starch reports decline in 2023 results

Summary: China Starch's revenue for 2023 sank by 1.27% YoY, and its revenue from lysine products dipped by 6.72% YoY.

On 20 March, China Starch Holdings Limited (China Starch, stock code: 03838.HK) issued the 2023 performance report for the reporting period ended 31 Dec., 2023. Key financial metrics from the report are as follows:

- Sales revenue: USD1.66 billion (RMB11.80 billion), down 1.27% YoY;
- Gross profit: USD78.33 million (RMB556.57 million), down 53.25% YoY;
- After-tax profit: USD22.15 million (RMB157.40 million), down 68.23% YoY.

There were two major contributors to the declines in financial performance, including the oversupply in markets that it operates in and the sharp drop in the products' market price.

Upstream products

In the reporting period, most of the corn starch producers in China resumed their operations and manufactured products in a proactive manner. The product supply was largely ramped up as a result, but the growth speed of market demand failed to keep up with speed of supply growth. Consequently, the oversupply of corn starch led to a swift decline in the product's market price. The average selling price of China Starch's corn starch in 2023 dropped by 1.95% YoY to USD396.29/t (RMB2,816/t), and total sales volume of this product in the year grew by 2.75% YoY to 2,007,204 tonnes.

Fermentation and downstream products





- Total sales volume of lysine products in 2023 was 340,746 tonnes, a YoY increase of 8.46% from 2022, principally due to the fact that the capacity of China Starch's lysine production facilities has been improved from 300,000 t/a to 500,000 t/a. However, the average selling price of lysine products descended by 13.99% from USD1,086.14/t (RMB7,718/t) in 2022 to USD934.15/t (RMB6,638/t) in 2023. According to China Starch's statement, the market price of pork in 2023 saw a drastic drop owing to excess supply, which resulted in a reduction of live hog numbers in farming and a further contraction of demand for animal feed. Against such backdrop, China Starch was not able to fully utilise its lysine capacity in H1 2023. But the situation was progressively eased in second half of the year.
- Sales volume of starch sugar in 2023 dwindled by 24.45% YoY to 179,598 tonnes, and average selling price thereof ascended by 15.46% YoY to USD369.97/t (RMB2,629/t), primarily because of the considerable uplift of sucrose price in the reporting period.
- Sales revenue from modified starch saw a YoY uptick, which was contributed by the company's endeavour in the reporting period to explore liquid modified starch market.
- Revenue from other fermentation products presented a marked growth, driven by the uptrend of revenue from bio-based materials.

TABLE 3: China Starch's product revenue and gross profit for 2023, million USD

Product		2023	2022	YoY variance
Revenue				
Upstream products		1,209.82	1,225.18	-1.25%
Fermentation and downstream products	Lysine	318.30	341.22	-6.72%
	Starch sugar	66.45	76.19	-12.78%
	Modified starch	49.48	27.58	79.37%
	Others	16.20	11.37	42.45%
	Sub-total	450.42	456.36	-1.30%
Gross profit				
Upstream products		18.29	62.16	-70.58%
Fermentation and downstream products		60.04	105.37	-43.02%

Source: China Starch





Company Dynamics

Zhenyuan Share to raise funds for amino acid projects

Summary: In late Feb., Zhenyuan Share revealed its plan to issue shares to specific subscribers, a bid to raise funds for amino acid and API projects.

On 28 Feb., Zhejiang Zhenyuan Share Co., Ltd. (Zhenyuan Share, stock code: 000705.SZ) issued the Plan to Issue Shares to Specific Subscribers in 2024. There will be no more than 35 specific subscribers, which include Zhenyuan Share's controlling shareholder Shaoxing Zhenyuan Health Industry Group Co., Ltd. and others. The company plans to raise at most USD112.58 million (RMB800.00 million) in this non-public issuance of shares.

The proceeds will be used in the following:

- "Construction project for Shangyu industrialisation base of directed biosynthesis for 2,400 t/a histidine (histidine hydrochloride), 1,000 t/a levodopa and 1,000 t/a tyrosine" (hereinafter referred to as "Shangyu industrialisation base project"), implemented by a controlled subsidiary Zhejiang Zhenyuan Biotechnology Co., Ltd. (Zhenyuan Biotech);
- "Aggregation and upgrading project for active pharmaceutical ingredients (API)", implemented by a wholly-owned subsidiary Zhejiang Zhenyuan Pharmaceutical Co., Ltd. (Zhenyuan Pharma);
- Supplementation of Zhenyuan Share's working capital.

TABLE 4: Zhenyuan Share's planned use of proceeds from non-public issuance of shares

Project name	Investment amount, million USD	
	Total amount	Amount from the proceeds
Shangyu industrialisation base project	82.61	52.77
Aggregation and upgrading project for APIs	67.72	38.70
Supplementation of working capital	21.11	21.11
Total	171.44	112.58

Source: Zhenyuan Share

Details of two projects to be financed by the proceeds

Zhenyuan Biotech's Shangyu industrialisation base project

- Construction site location: Hangzhou Bay Shangyu Economic and Technological Development Zone, Zhejiang Province
- Construction details: A biological synthesis factory building and its supporting facilities will be built. A series of supporting production devices will be purchased and installed.
- Planned capacities: 2,400 t/a for histidine, 1,000 t/a for levodopa and 1,000 t/a for tyrosine
- Economic benefits: It is estimated that the project's internal rate of return (after tax) will be 16.90%, and static payback period be 10.26 years (after tax; with construction period taken into consideration).
- Progress: Environmental impact report was approved by the Ecological Environment Bureau of Shaoxing City on 24 Jan. The project is currently under construction and will progressively go into operation in H2 2024 according to estimation.





(For more information, please refer to **Amino Acids China E-News 202401**: EI report of Zhenyuan Biotech's Shangyu industrialisation base project accepted.)

Zhenyuan Pharma's aggregation and upgrading project for APIs

- Construction site location: Hangzhou Bay Shangyu Economic and Technological Development Zone, Zhejiang Province
- Construction details: An automated factory building, and a master control building will be built. A series of supporting production devices will be purchased and installed.
- Planned capacities: 50 t/a for nystatin, 100 t/a for S-(5'-Adenosyl)-L-methionine p-toluenesulfonate salt, 50 t/a for S-Adenosylmethione-1,4-butanedisulfonate, 20 t/a for sisomicin, etc.
- Economic benefits: It is estimated that the project's internal rate of return (after tax) will be 19.76%, and static payback period be 9.22 years (after tax; with construction period taken into consideration).
- Progress: The project has been filed for record of local authority, and passed the energy conservation audit on 6 Feb.

Huaheng Biotech to invest USD98.51 million in new amino acid project

Summary: In early March, Huaheng Biotech disclosed its plan to invest in "alternate production project of 60,000 t/a three branched-chain amino acids and tryptophan, as well as 10,000 t/a refined amino acids". Ouhe Biotech's technologies of arginine production via biological method will be licensed to Huaheng Biotech.

Anhui Huaheng Biotechnology Co., Ltd. (Huaheng Biotech) released an announcement on 7 March, stating that the company is planning an investment to build the "alternate production project of 60,000 t/a three branched-chain amino acids and tryptophan, as well as 10,000 t/a refined amino acids", with its wholly-owned subsidiary Bayannur Huaheng Biotechnology Co., Ltd. (Bayannur Huaheng) as the project implementer.

Project overview

- Type of project: new construction
- Construction site location: Industrial Park, Shanba Town, Hanggin Rear Banner, Bayannur City, Inner Mongolia Autonomous Region
- Investment amount: USD98.51 million (RMB700.00 million) at most, raised by the company itself
- Site area: 126,667 square metres
- Construction items: a fermentation workshop, a purification & refining workshop, fermentation device(s), extraction device(s) and supporting facilities
- Planned capacities: 60,000 t/a for three branched-chain amino acids and tryptophan, as well as 10,000 t/a for refined amino acids
- Construction period: 24 months (estimated)
- Progress: The project's environmental impact assessment information was published for the first time on 8 March. The application to file the project for record was approved by local authority on 13 March.



TABLE 5: Status of all amino acid projects in Bayannur Huaheng's factory

Project name	Investment amount, million USD	Designed production capacities	Status
Alternate production project of 25,000 t/a alanine and valine	56.29	15,000 t/a for L-Alanine and 10,000 t/a for L-Valine	The project is in operation.
16,000 t/a three branched-chain amino acids and derivative project	35.18	6,000 t/a for L-Valine derivative A, 5,000 t/a for L-Leucine, 5,000 t/a for L-Isoleucine, 2,880 t/a for protein powder (by-product) and 3,000 t/a for amino acid paste (by-product)	Main construction sections were built. EP acceptance check has not yet been conducted.
210,000 t/a functional sugars and 4,000 t/a refined amino acids project	7.04	increasing the original functional sugar capacity by 150,000 t/a to 210,000 t/a; 4,000 t/a for refined amino acids	Under construction
Alternate production project of 60,000 t/a three branched-chain amino acids and tryptophan, as well as 10,000 t/a refined amino acids	98.51	60,000 t/a in total for three branched-chain amino acids and tryptophan; 10,000 t/a for refined amino acids	Proposed

Note: "EP" stands for environmental protection.

Source: Bayannur Huaheng

According to another announcement issued on the same day, Huaheng Biotech intends to sign a Technology License Agreement with Hangzhou Ouhe Biotechnology Co., Ltd. (Ouhe Biotech). In the form of exclusive implementation license, Ouhe Biotech (the licensor) will grant Huaheng Biotech (the licensee) the exclusive rights to use its technologies of arginine production via biological method, with a license period of 20 years. Said technologies involve proprietary technologies and patents related to genetically modified bacteria strain(s) and fermentation & purification processes.

Huaheng Biotech will pay an industrialisation royalty to Ouhe Biotech, starting from the year when the technological achievements specified in the agreement/contract are realised for industrial production. The royalty payment will be 2.80% of the annual sales (including tax) of end products that are produced by using the said technological achievements.

In Ouhe Biotech's technologies of arginine production via biological method, glucose is used as the starting material, and a series of metabolic intermediates are generated, in order to produce arginine at the end. Ouhe Biotech's method overcomes the complex production process and heavy environmental pollution, which are shortcomings of the protein hydrolysis method, an alternative production method for arginine. Meanwhile, Ouhe Biotech's method has advantages like mild production conditions, high product purity and low production costs.



Relevant project: The environmental impact report of "construction project of alternate production of 25,000 t/a valine and arginine as well as 1,000 t/a inositol (via biological method)", a project implemented by Chifeng Huaheng Synthetic Biotechnology Co., Ltd.—also one of Huaheng Biotech's subsidiaries, was approved on 22 Feb.

EI report of Tongliao Meihua's isoleucine project published

Summary: Tongliao Meihua plans to introduce 6,500 t/a of production capacity for isoleucine.

On 22 March, the environmental impact (EI) report of isoleucine project from Tongliao Meihua Biological Sci-tech Co., Ltd. (Tongliao Meihua) was published.

Project overview

- Type of project: reconstruction and expansion
- Investment amount: USD3.80 million (RMB27.00 million), 4.81% of which (USD182,946/RMB1.30 million) will be for environmental protection purposes
- Construction site location: Horqin District, Tongliao City, Inner Mongolia Autonomous Region
- Site area: 4,988 square metres
- Construction details: In the existing tryptophan production workshop, the tryptophan line will be dismantled, and a new isoleucine line will be built.
- Planned capacities: 6,450 t/a for feed-grade isoleucine and 50 t/a for food-grade isoleucine
- Major raw materials needed in production: 5,854 t/a of glucose and 3,089 t/a of beet molasses
- Production process: The microbial anaerobic fermentation method is first applied to produce fermentation broth. Then, fermentation broth undergoes filtration by ceramic membrane, decolourisation by activated carbon, multiple-effect evaporation, crystallisation, separation and drying. In the end, isoleucine is produced.
- Labour needs & working schedule: There won't be new job posts created for this project. There will be 333 working days/7,992 working hours per year.
- Economic benefits: Estimations show the project will bring in yearly operating revenues of USD54.88 million (RMB390.00 million) and yearly after-tax profits of USD20.94 million (RMB148.77 million) after it reaches full operation.

Tongliao Meihua's operating revenue for 2023 totalled USD1.41 billion (RMB10.02 billion) and net profit for 2023 was USD142.14 million (RMB1.01 billion), according to the performance report of its parent Meihua Holdings Group Co., Ltd. (stock code: 600873.SH). Tongliao Meihua's production capacities for amino acids, including the operational ones and the ones to be built, are summarised in the following table.





TABLE 6: Tongliao Meihua's production capacities for amino acids in its factory compound

Product	Production capacity, t/a	Note
Gourmet powder monosodium glutamate	200,000	In operation
	500,000	To be built; related project has been filed for record
Tryptophan	10,000	In operation; to be removed in order to make way for isoleucine project
Glutamine	5,000	In operation
Valine	21,800	
Threonine	250,000	
Isoleucine	6,500	To be built by isoleucine project

Source: Tongliao Meihua

Projects of Shouguang Golden Corn and Hangzhou Hetai pass EP acceptance check

Summary: Recently, Shouguang Golden Corn introduced 110,000 t/a of lysine capacity, and Hangzhou Hetai added 500 t/a of arginine capacity.

Submitted by Shouguang Golden Corn Biotechnology Co., Ltd. (Shouguang Golden Corn), a report containing the monitoring results of post-completion environmental protection (EP) acceptance inspection on "corn deep processing industry chain project—Phase II of lysine production line project" was made public on 4 March. Notably, project details from the report published this time are partially different from the information disclosed by local media on 16 Jan.

The "corn deep processing industry chain project" incorporates several sub-projects, one of which is "lysine production line project". The "lysine production line project" is divided into two phases, with Phase I passing EP acceptance inspection in July 2020. The report published this time shows Phase II also passed the inspection.

Overview of Phase II of Shouguang Golden Corn's "lysine production line project"

- Type of project: new construction
- Construction site location: Shouguang Economic and Technological Development Zone, Shouguang City, Shandong Province
- Investment amount: USD168.87 million (RMB1.20 billion), 1.1% of which (USD1.83 million/RMB13.00 million) were for EP purposes
- Construction details: A lysine production line was built in the fermentation workshop and refining workshop that were constructed in Phase I. New production devices were purchased and installed.
- Major raw materials needed in production: corn starch (self-produced) and rice hull flour
- Number of budgeted posts: 160 (unchanged after the project implementation)
- Working schedule: three 8-hour shifts per working day; 350 working days per year
- Construction period: March 2023–Dec. 2023
- Facilities debugging period: 16 Jan., 2024–15 Dec., 2024



TABLE 7: Production capacities in Shouguang Golden Corn's "lysine production line project"

Product		Production capacity, t/a		
		Phase I	Phase II	Total
Main products	98 lysine	190,000	110,000	300,000
	70 lysine			
By-products	Saccharification residue	/	14,970	14,970
	Liquid fertiliser	29,316	2,530	31,846

Note:1. The standard for 98 lysine shows: lysine content $\geq 98.5\%$. The standard for 70 lysine shows: lysine content $\geq 55\%$.

2. All products are for sale.

Source: Shouguang Golden Corn

The passing results of prior EP acceptance inspection on "4,435 t/a food additive arginine, 12,100 t/a feed additives and 24,000 t/a enzymatic hydrolysed vegetable protein project" (hereinafter referred to as "arginine project") from Hangzhou Hetai Biotechnology Co., Ltd. (Hangzhou Hetai) were recently published. The publication period of the results ended on 26 Feb.

The project's original designed production capacities, as indicated in project name, underwent changes during construction, and arginine capacity was reduced as a result. In addition, the project construction was divided into phases. Some of the feed additive capacities passed prior EP acceptance inspection in Dec. 2020.

The inspection conducted this time covers production lines for arginine, feed additive probiotics and enzymatic hydrolysed vegetable protein.

Overview of Hangzhou Hetai's arginine project

- Type of project: expansion construction
- Construction site location: Jiande High-tech Industrial Park, Hangzhou City, Zhejiang Province
- Investment amount: USD12.11 million (RMB86.06 million), 6.47% of which (USD783,856/RMB5.57 million) were for EP purposes
- Construction details: A fermentation workshop, an extraction workshop, a feed additive workshop and an enzymatic hydrolysed vegetable protein workshop were newly built. Supporting facilities and utilities were also built.
- Major raw materials needed in production: glucose, vitamin H, corn steep liquor and ammonium sulphate
- Labour needs: The number of the company's budgeted job posts has been increased by 40 for this project.
- Working schedule: three 8-hour shifts per working day; 330 working days per year
- Construction period: Oct. 2020–Oct. 2022
- Debugging period: April 2023–April 2024
- Period of on-site acceptance inspection and monitoring: July 2023–Jan. 2024



TABLE 8: Production capacities in Hangzhou Hetai's arginine project

Product		Actual capacity, t/a	Note
Food additive	Arginine	500 /	
Feed additives	Probiotics	50	<i>Bacillus subtilis, Bacillus licheniformis, Bacillus coagulans, etc.</i>
	Organic minor elements	12,000	This portion of production capacities passed prior EP acceptance inspection in Dec. 2020, and is currently operational.
Enzymatic hydrolysed vegetable protein		24,000 /	

Note: There is still a 50 t/a capacity for feed additive probiotics left to be built. Upon completion, the total capacity for probiotics will hit 100 t/a.
Source: Hangzhou Hetai



Price Update

The prices of major amino acid varieties in China, March 2024

TABLE 9: The prices of major amino acid varieties in China, Feb. 2024–March 2024

Product	Price in March 2024, USD/t	Price in Feb. 2024, USD/t	MoM variance
98.5% Lysine	1,397.57	1,313.74	6.40%
70% Lysine	749.38	713.73	5.01%
98% Tryptophan	10,582.76	10,886.85	-2.78%
Methionine (liquid)	2,237.58	2,237.89	0.00%
Methionine (solid)	3,105.45	3,096.17	0.31%
99% Threonine	1,425.44	1,444.21	-1.29%

Note:1. "Methionine (liquid)" refers to liquid methionine hydroxy analogue (MHA-FA); "98.5% Lysine" refers to 98.5% L-Lysine hydrochloride; "70% Lysine" refers to 70% L-Lysine sulphate.

2. Month-on-month variance is calculated with RMB price.

3. The USD/CNY exchange rate in this newsletter is USD1.00 = CNY7.1059, which was sourced from the People's Bank of China on 1 March, 2024. All the prices mentioned in this newsletter will include the VAT, unless otherwise specified.

Source:CCM

Major amino acid products witness varied price trends in March

Summary: In March, major amino acid products witnessed varied price trends. Methionine price remained stable, lysine price rebounded, while the prices of threonine and tryptophan fell.

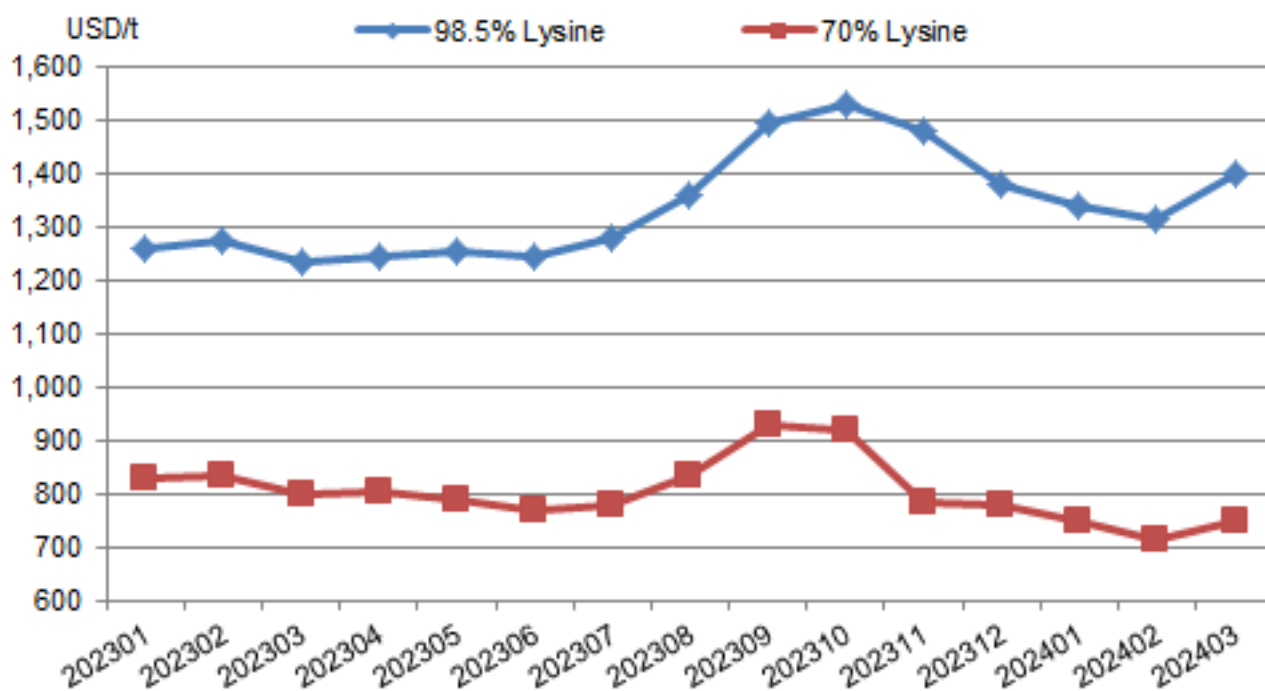
In March, the lysine market picked up.

- Ex-works price of 98.5% L-Lysine hydrochloride in this month was USD1,397.57/t, up 6.40% MoM and up 16.15% YoY.
- Ex-works price of 70% L-Lysine sulphate in this month was USD749.38/t, up 5.01% MoM and down 4.23% YoY.

In Jan.–Feb. 2024, lysine market was slack and prices showed a downward trend. However, a turnaround came in late Feb., following the Spring Festival holiday, as the overseas demand recovered. This led to an increase in export orders for Chinese lysine exporters, accelerating export growth. As a result, the pressure on Chinese lysine suppliers was eased, and the intent among lysine producers to maintain high prices became strong. Additionally, market price of corn rebounded from the bottom, owing to a temporary tightening of supply after the holiday. The rebound of corn price caused lysine production costs to rise, prompting producers to further lift the prices. CCM's price monitoring results show market price of corn in March was USD328.04/t, up 1.88% MoM.



FIGURE 1: Monthly ex-works price of lysine products, Jan. 2023–March 2024



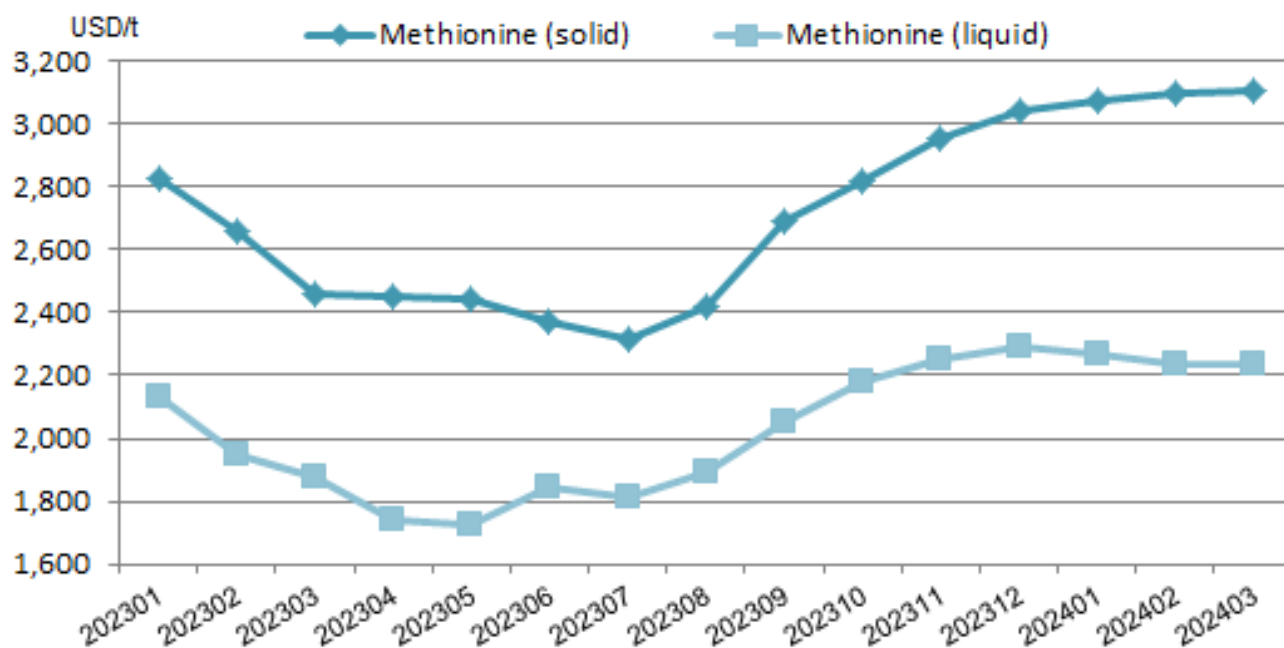
Note: "98.5% Lysine" refers to 98.5% L-Lysine hydrochloride; "70% Lysine" refers to 70% L-Lysine sulphate.
Source: CCM

In March, the methionine market was relatively stable.

- Market price of solid methionine in this month was USD3,105.45/t, up 0.31% MoM and up 29.23% YoY.
- Market price of liquid methionine hydroxy analogue (MHA-FA) in this month was USD2,237.58/t, which remained basically the same as last month, but went up by 22.31% YoY.

Compared to Dec. 2023, the average monthly import volume of methionine in Jan.–Feb. 2024 rose, while its export volume fell. Therefore, in March, the domestic market saw an increase in the spot supply of methionine, which led to an abundance of supply and a reduced inclination among producers to raise prices. However, with certain domestic and overseas methionine producers planning maintenance shutdowns in April, a decrease in supply is expected. Consequently, producers are keen to maintain high prices, with methionine prices staying at a high level.

FIGURE 2: Monthly market price of methionine products, Jan. 2023–March 2024



Note: "Methionine (liquid)" refers to liquid methionine hydroxy analogue (MHA-FA).

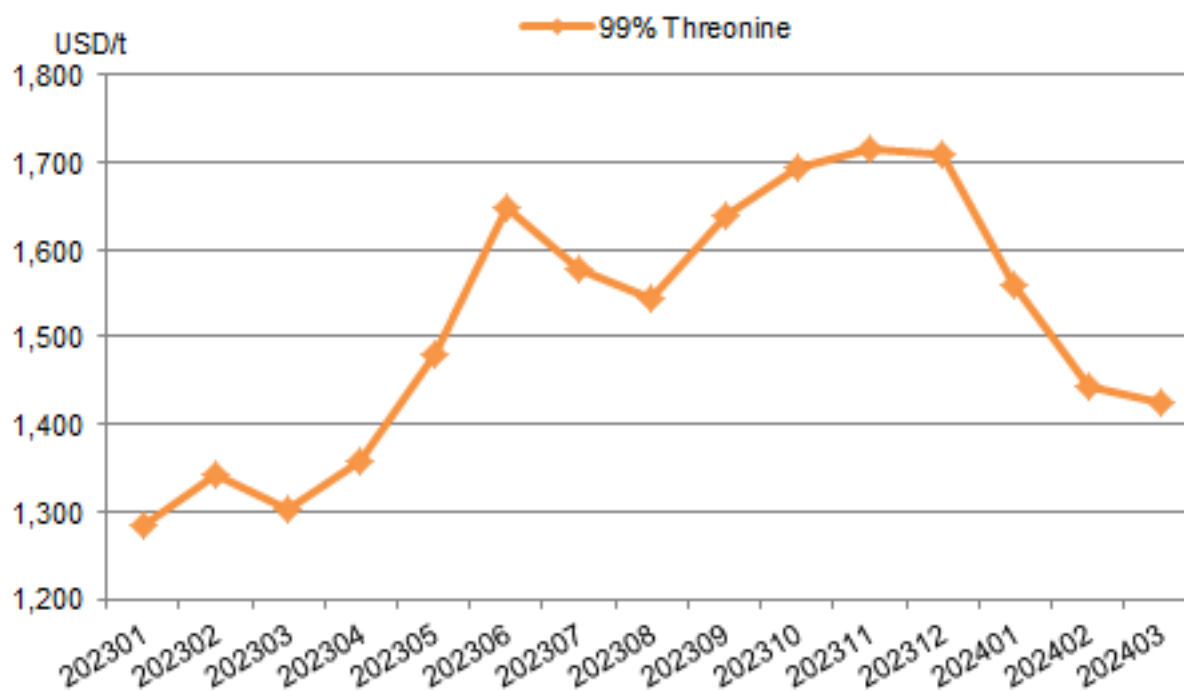
Source: CCM

In March, the threonine market was lacklustre.

- Ex-works price of 99% threonine was USD1,425.44/t, down 1.29% MoM and up 11.92% YoY.

After the holiday, threonine production in China normalised and market supply was ample. However, due to weak domestic demand and overseas customers only purchasing as needed, threonine price continued to drop. The decline in threonine price slowed significantly compared to the previous two months, in part due to a rebound in corn price, a raw material for threonine, which shored up threonine costs to some extent.

FIGURE 3: Monthly ex-works price of 99% threonine, Jan. 2023–March 2024



Source:CCM

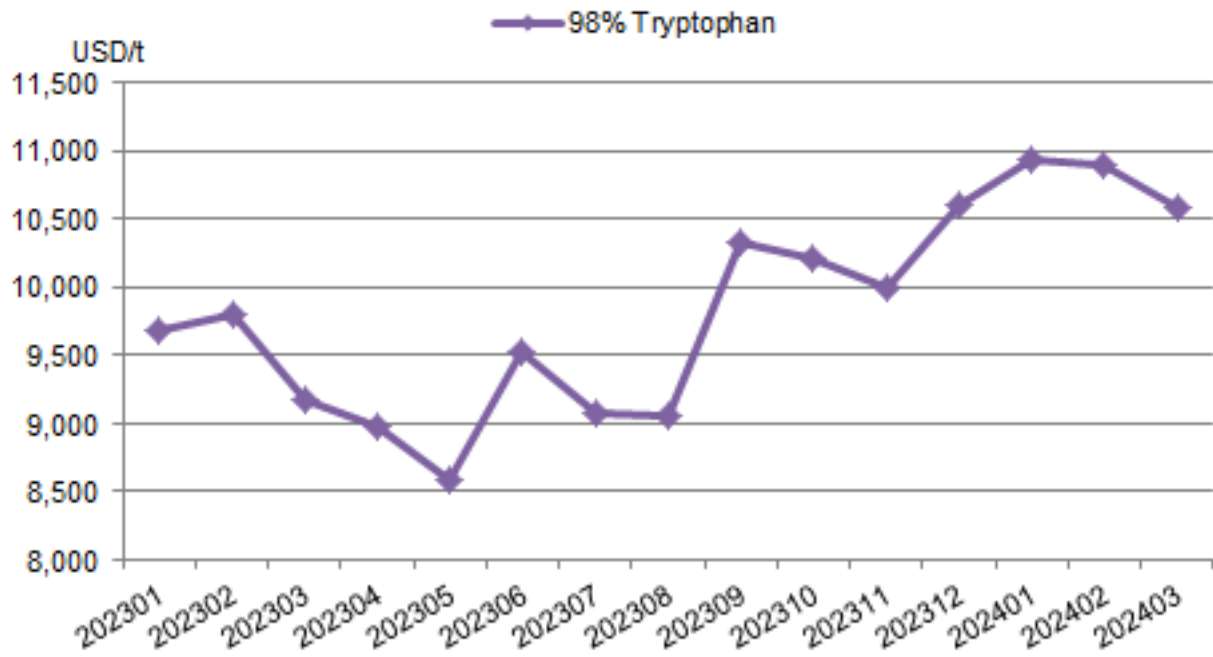
In March, the tryptophan market declined.

- Ex-works price of 98% tryptophan was USD10,582.76/t, down 2.78% MoM and up 18.11% YoY.

From Jan. to Feb., tryptophan supply was limited, and producers increased their quotation prices as a result. After resuming operations from holiday break, tryptophan producers were primarily focused on fulfilling sales orders in early March, which kept tryptophan price high. However, post-holiday demand was weaker than anticipated. By mid-March, producers began to reduce their quotation prices. Despite an abundant supply by late March, demand remained weak, causing the price to drop. Nevertheless, this drop was minimal due to a rebound in the price of corn, a raw material for tryptophan, which increased production costs.



FIGURE 4: Monthly ex-works price of 98% tryptophan, Jan. 2023–March 2024



Source:CCM





Import and Export

Import and export data of five amino acid varieties in China, Jan.–Feb. 2024

TABLE 10: Import data of five amino acid varieties in China, January 2024

Product	Import volume, tonne	MoM variance	Import value, USD	MoM variance
Cystine	16.00	/	130,401	/
Lysine ester and salt	64.20	78.02%	136,117	84.99%
Lysine	0.33	/	35,692	/
Methionine	16,188.05	55.11%	34,879,050	59.42%
Glutamic acid	0.27	/	26,288	26.14%

Source: China Customs & CCM

TABLE 11: Export data of five amino acid varieties in China, January 2024

Product	Export volume, tonne	MoM variance	Export value, USD	MoM variance
Cystine	58.45	/	946,049	/
Lysine ester and salt	92,518.84	0.50%	115,871,571	-3.28%
Lysine	13.43	4.91%	143,627	-20.63%
Methionine	24,168.88	-13.40%	52,863,515	-13.96%
Glutamic acid	8,050.97	-8.31%	9,615,258	-5.95%

Source: China Customs & CCM

TABLE 12: Import data of five amino acid varieties in China, February 2024

Product	Import volume, tonne	MoM variance	Import value, USD	MoM variance
Cystine	0.13	-99.19%	11,006	-91.56%
Lysine ester and salt	0.01	-99.99%	2,502	-98.16%
Lysine	24.84	/	303,226	/
Methionine	8,334.28	-48.52%	17,989,464	-48.42%
Glutamic acid	0.40	48.87%	28,390	8.00%





Source: China Customs & CCM

TABLE 13: Export data of five amino acid varieties in China, February 2024

Product	Export volume, tonne	MoM variance	Export value, USD	MoM variance
Cystine	34.55	-40.90%	725,776	-23.28%
Lysine ester and salt	79,960.92	-13.57%	95,701,472	-17.41%
Lysine	12.68	-5.61%	149,618	4.17%
Methionine	16,862.94	-30.23%	37,868,863	-28.36%
Glutamic acid	5,399.37	-32.94%	6,227,729	-35.23%

Source: China Customs & CCM

China's methionine export volume in Jan.–Feb. 2024 shows huge YoY growth

Summary: In Jan.–Feb. 2024, China's methionine import volume dipped by 13.90% YoY, which suggests the country is lessening its reliance on methionine imports. In the same period, the country's methionine export volume surged by 103.10% YoY.

Import/export volume

In Jan.–Feb. 2024, China imported 24,522.34 tonnes of methionine, which dipped by 13.90% compared with that in the corresponding period of 2023. On a year-on-year basis, the country's methionine import volume rose by 37.45% in Jan., but dropped by 50.11% in Feb. China is lessening its reliance on methionine imports. The country's all-year methionine import volumes in 2021, 2022 and 2023 totalled 204,189.26 tonnes, 187,184.51 tonnes (-8.33% YoY) and 163,362.09 tonnes (-12.73% YoY) respectively, indicating an accelerated pace of reducing imports. It is expected that China may further whittle down the import volume of methionine, as domestic methionine capacities will keep expanding in the future.

The accelerated progress of replacing imported methionine with Chinese-made ones also facilitated the growth of China's methionine export volume. In Jan.–Feb. 2024, China exported 41,031.82 tonnes of methionine, which soared by 103.10% compared with that in the corresponding period of 2023. On a YoY basis, the country's methionine export volume rose by 81.79% in Jan. and swelled by 144.12% in Feb. In terms of volume, the major destinations of China's methionine exports in this two-month period were Brazil (8,827.45 tonnes), Russia (7,244.90 tonnes) and Germany (6,245.90 tonnes). The country's all-year methionine export volumes in 2021, 2022 and 2023 totalled 88,626.82 tonnes, 118,259.99 tonnes (+33.44% YoY) and 154,363.07 tonnes (+30.53% YoY) respectively.

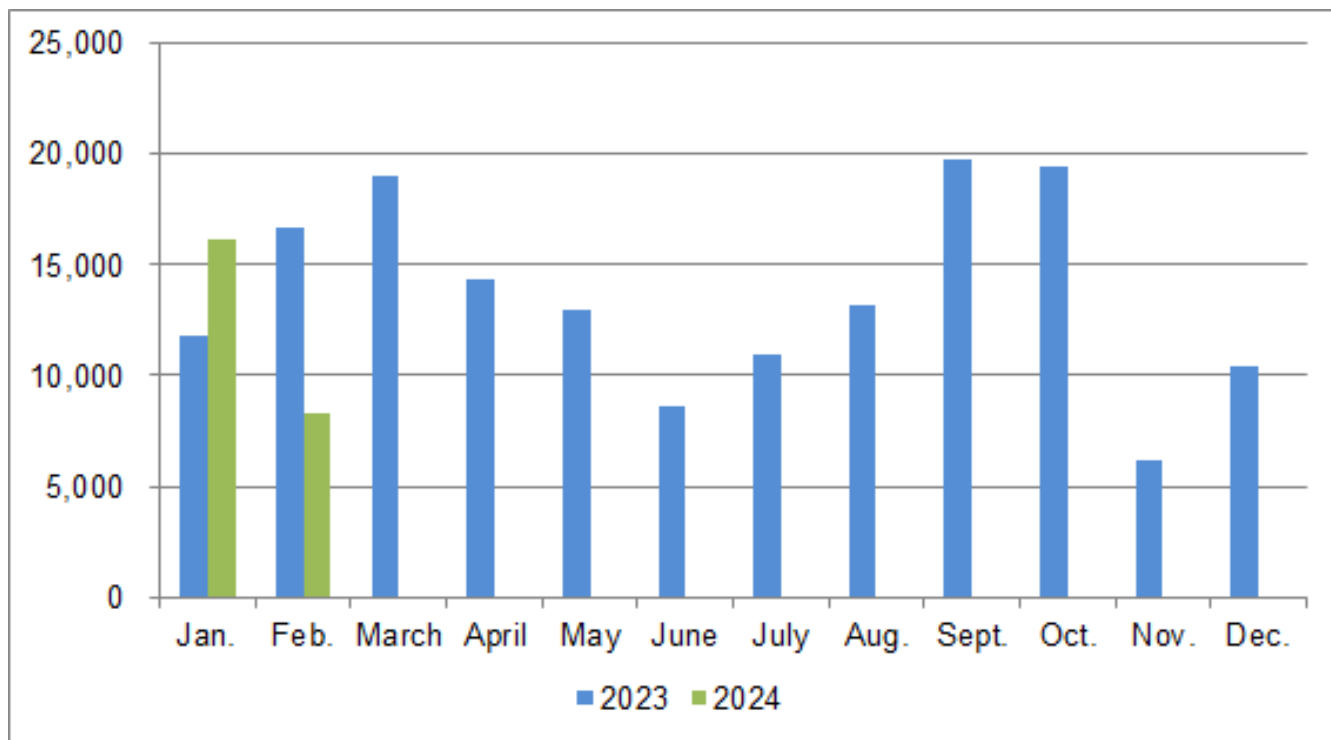
Import/export price

China's import price of methionine in Jan. 2024 averaged USD2,154.62/t, up 2.78% MoM but down 8.05% YoY; the counterpart in Feb. averaged USD2,158.49/t, up 0.18% MoM but down 6.28% YoY.



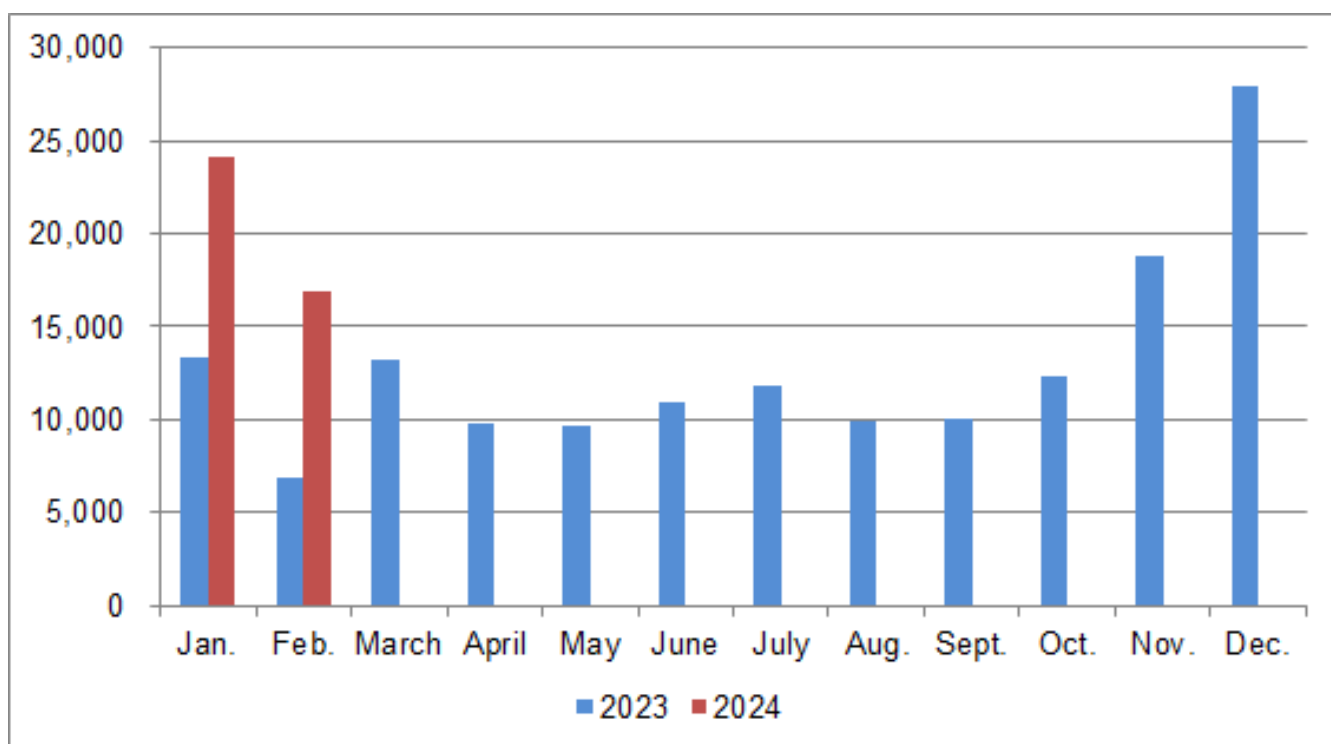
As for export price, China's export price of methionine in Jan. 2024 averaged USD2,187.26/t, which slightly sank by 0.65% from Dec. 2023 and remained basically the same as Jan. 2023; the counterpart in Feb. averaged USD2,245.69/t, up 2.67% MoM and up 1.87% YoY.

FIGURE 5: China's monthly import volume of methionine during Jan. 2023–Feb. 2024, tonne



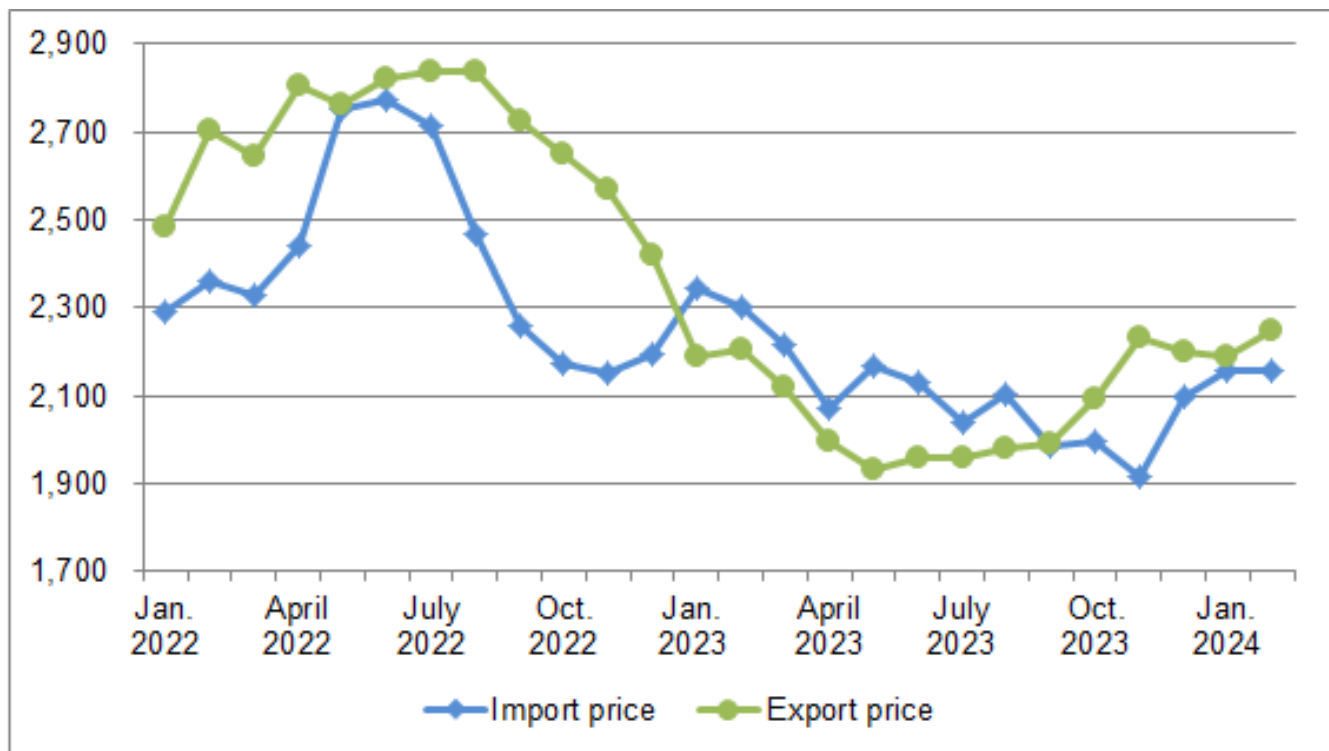
Source:China Customs & CCM

FIGURE 6: China's monthly export volume of methionine during Jan. 2023–Feb. 2024, tonne



Source:China Customs & CCM

FIGURE 7: China's monthly average import & export price of methionine during Jan. 2022–Feb. 2024, USD/t



Source: China Customs & CCM

News in Brief

Shanghai Ajinomoto Seasonings finishes EP acceptance check on production increase project

Submitted by Shanghai Ajinomoto Seasonings Co., Ltd. (Shanghai Ajinomoto Seasonings), a report containing the passing results of post-completion environmental protection (EP) acceptance inspection on production increase project was published on 7 March.

Project overview

- Type of project: expansion construction
- Investment amount: USD3.60 million (RMB25.59 million), 1.95% of which (USD70,364/RMB500,000) were for EP purposes
- Construction site location: Songjiang District, Shanghai Municipality
- Construction details: New production devices were introduced to the seasonings production line in the existing factory building. A few new automated packaging devices and testing devices were introduced to the gourmet powder monosodium glutamate (MSG) processing production line.
- Date of construction commencement: 10 March, 2023
- Date of construction completion: 9 May, 2023
- Debugging period: 12 May, 2023–27 Feb., 2024

TABLE 14: All production capacities in the factory of Shanghai Ajinomoto Seasonings

Product	Production capacity, t/a	
	Before the project	After the project
Processed gourmet powder MSG	10,000	8,000
Large-particle seasonings (chicken bouillon particles, etc.)	2,200	2,200
Small-particle seasonings (chicken bouillon powder, etc.)	700	700
Powdery fresh flavour seasonings	3,700	4,700

Source: Shanghai Ajinomoto Seasonings

EIA info of Shandong Shineking's polyglutamic acid project disclosed

On 21 March, the environmental impact assessment (EIA) information of polyglutamic acid project from Shineking Biotech (Shandong) Co., Ltd. (Shandong Shineking) was published for the first time.

Project overview

- Type of project: new construction
- Construction site location: Yangkou Advanced Manufacturing Industrial Park, Yangkou Town, Shouguang City, Shandong Province
- Site area: 1,200 square metres
- Construction details: New production devices such as seed tank, fermenter and enamel reaction kettle will be purchased and installed in an existing production workshop.
- Planned capacities: 4,000 t/a for polyglutamic acid (including phosphate), 4,600 t/a for pantoea polysaccharide, 2,000 t/a for



sphingans and 2,000 t/a for biological glycolipids

Shandong Shineking is 100%-owned by Nanjing Shineking Biotech Co., Ltd., which is building the "50 t/a polysaccharides, 50 t/a polyglutamic acid and salt derivatives technical renovation project".

Evonik Vland Biotech goes into operation

Evonik Vland Biotech (Shandong) Co., Ltd. (Evonik Vland Biotech) formally went into operation on 14 March. It is a joint venture (JV) between Evonik (China) Co., Ltd. and Shandong Vland Biotech Co., Ltd. (Shandong Vland). *(For more information about the JV, please refer to **Amino Acids China E-News 202310: Evonik China and Shandong Vland to set up JV, for R&D of animal gut health products.**)*

Evonik Vland Biotech, headquartered in Qingdao City, utilises the apparatuses of Shandong Vland that are located in an industrial park in Binzhou City for its production. Evonik Vland Biotech will introduce new ingredients into the formula of its animal gut health products; the overseas sale of these products will be undertaken by Evonik Industries AG (Evonik).

Evonik's sales for 2023 reached USD16.66 billion (EUR15.30 billion), of which USD3.93 billion (EUR3.61 billion) were contributed by Nutrition & Care division. The division's sales saw a YoY decline of 15%, primarily because the price of essential amino acids for animal nutrition (such as methionine) dropped significantly. However, such downtrend in price somewhat eased in H2 2023.

(The EUR/USD exchange rate used here is EUR1=USD1.0892, the reference rate published by European Central Bank on 18 March.)

Huaheng Biotech participates in establishing Hefei Synthetic Biology Research Institute

On 19 March, the signing ceremony for a project called "Hefei Synthetic Biology Innovation Research Institute" was held. The signing parties were Anhui Hengyou Biotechnology Co., Ltd. (Hengyou Biotech) and the People's Government of Changfeng County, Hefei City.

Hengyou Biotech, which is responsible for this project, was formed by Hangzhou Youze Biotechnology Co., Ltd. and Anhui Huaheng Biotechnology Co., Ltd. (Huaheng Biotech, stock code: 688639.SH) in Dec. 2023. Huaheng Biotech owns 40% of Hengyou Biotech.

The project will rely on the technological resources and industrial advantages of Huaheng Biotech and the Chinese Academy of Engineering. It will focus on the research, application and popularisation of synthetic biotechnologies in various fields. These fields include intermediate chemicals (pharmaceutical intermediates, fine chemical intermediates, bio-based material monomers, etc.), daily chemical/personal care products, foods, modernisation of traditional Chinese medicine, animal nutrition, and plant nutrition.

Havay Group's granular amino acids project gains EP acceptance

A report, which contains the passing results of post-completion environmental protection (EP) acceptance inspection on granular amino acids project from Tai'an Havay Group Co., Ltd. (Havay Group), was published on 18 March. Havay Group currently owns production capacities of 20,000 t/a for betaine hydrochloride and 5,000 t/a for betaine powder.

Project overview





- Type of project: new construction
- Actual investment amount: USD281,456 (RMB2.00 million), 12.5% of which (USD35,182/RMB250,000) were for EP purposes
- Construction site location: Daiyue Chemical Industrial Park, Tai'an City, Shandong Province
- Construction details: An amino acid production line was built in an existing betaine spray drying workshop.
- Designed capacities: 5,000 t/a for threonine, 500 t/a for tryptophan and 500 t/a for valine
- Production process: Powdery amino acids are purchased from suppliers and used as raw materials. The dry granulation method is applied in production.
- Construction period: Sept. 2023–Dec. 2023
- Period of on-site acceptance inspection and monitoring: 25 Feb., 2024–26 Feb., 2024

Grand Pharma's amino acid business delivers significant growth for 2023

On 20 March, Grand Pharmaceutical Group Limited (Grand Pharma, stock code: 00512.HK) issued 2023 performance report, which shows its amino acid business delivered a significant growth. In the reporting period, Grand Pharma's revenue from amino acid segment (including taurine) totalled USD352.29 million (HKD2.76 billion), up 16.1% YoY. (*The USD/HKD exchange rate used here is USD1=HKD7.8281, sourced on 1 March.*)

Regarding project progress, Grand Pharma's amino acid production base located in Xiantao City, Hubei Province, which mainly produces products such as cysteine hydrochloride monohydrate, acetylcysteine, cysteine, acetyltyrosine, and ornithine hydrochloride, has been built and has fully entered the trial production stage. After this production base formally comes on stream, Grand Pharma's production capacity for several high-quality amino acids will be further expanded, which is expected to provide continuous momentum for the subsequent profit growth of its amino acid segment.

As for technological innovation, Grand Pharma has established long-term strategic partnerships with several research institutions including Tsinghua University and Wuhan University, to jointly develop new amino acid fermentation technologies. Meanwhile, the technological development work of amino acids used in cell culture medium has been furthered, which ensures technical support for application research of amino acids used as key raw materials for the culture medium required by biological medicines.

As for the international market, sales network of Grand Pharma's amino acid segment covers more than 140 countries and regions around the world, including mainstream markets such as Europe, the United States, Japan, Southeast Asia and China. Overseas business accounts for more than 50% of the segment's total coverage, and some amino acid varieties of Grand Pharma rank among the top three in terms of market share.

Jincheng Biopharma completes EP acceptance check on SAM line technical renovation project

On 27 Feb., the passing results of post-completion environmental protection (EP) acceptance inspection on "technical renovation project on automation upgrading for S-Adenosyl methionine (SAM) production line" from Shandong Jincheng Biopharmaceutical Co., Ltd. (Jincheng Biopharma) were made public, with a publication period ending on 25 March.

Project overview





- Type of project: technical renovation
- Construction site location: Zichuan Economic Development Zone, Zibo City, Shandong Province
- Investment amount: USD4.93 million (RMB35.00 million), 6.71% of which (USD330,711/RMB2.35 million) were for EP purposes
- Site area: 1,600 square metres
- Construction details: The production workshop, which originally incorporated production devices for 30 t/a glutathione, was renovated by introducing certain new devices. The operation of original 30 t/a glutathione line has been discontinued.
- Production capacity: 200 t/a for S-Adenosyl-L-methionine disulfate tosylate
- Major raw materials needed in production: 30% glucose, p-Toluenesulfonic acid, ammonia water and acetic acid
- Number of budgeted posts: 140
- Working schedule: three 8-hour shifts per working day; 300 working days per year
- Construction period: Sept. 2022–March 2023
- Date of commencing debugging: March 2023 (still ongoing)
- Date of on-site acceptance inspection: Feb. 2024

Apart from capacity delivered by the aforementioned project, Jincheng Biopharma is able to produce amino acids and derivatives including 2,000 t/a of alanine, 400 t/a of glutathione, 30 t/a of S-Adenosylmethione-1,4-butanedisulfonate, etc.

Tianli Pharma to introduce L-Tryptophan capacity

On 8 March, the Ecological Environment Bureau of Shouguang City accepted and published the environmental impact (EI) report of "upgrading and renovation project for organic acids" from Shandong Tianli Pharmaceutical Co., Ltd. (Tianli Pharma).

There are several vitamin C plants in Tianli Pharma's vitamin factory. However, due to insufficient market demand, the production loads of VC plant and sodium ascorbate plant are at a relatively low level. Research indicates that the process of producing tryptophan via fermentation is similar to the fermentation and extraction steps in VC production. Therefore, the company plans to technically renovate some of VC production devices for transition to tryptophan production.

Project overview

- Type of project: technical renovation
- Construction site location: Shouguang City, Weifang City, Shandong Province
- Investment amount: USD6.46 million (RMB45.89 million), 2.2% of which (USD140,728/RMB1.00 million) will be for environmental protection purposes
- Construction details: Some production devices in the workshops for fermentation, extraction, conversion and refining will be renovated.
- Major raw materials needed in production: glucose, calcium carbonate and ammonia water
- Labour needs: There won't be new job posts created for this project.
- Working schedule: four groups of workers; three 8-hour shifts per working day; 330 working days per year
- Construction period: April 2024–May 2024



**TABLE 15:** Production capacities to be introduced by Tianli Pharma's "upgrading and renovation project for organic acids"

Product	Production capacity, t/a	Specifications	Note
L-Tryptophan granules	2,000	25%	Crude small-variety amino acid; used as a feed additive
L-Tryptophan	2,000	98%	Refined small-variety amino acid; used as a feed additive

Source: Tianli Pharma

Wuxi Jinghai posts estimated results for 2023

On 26 Feb., Wuxi Jinghai Amino Acid Co., Ltd. (Wuxi Jinghai, stock code: 836547.BJ) released its estimated results for 2023.

Estimated key financial metrics for 2023:

- Operating revenue: USD54.84 million (RMB389.68 million), up 0.82% YoY;
- Net profit attributable to shareholders: USD7.67 million (RMB54.51 million), down 15.29% YoY
- Net profit attributable to shareholders excl. extraordinary items: USD8.47 million (RMB60.16 million), down 10.72% YoY.

The company's operating revenue for 2023 is estimated to increase YoY, driven by its strong product offerings, effective market expansion and development of new application fields. Gross profit margin for 2023 is expected to be 32.86%, an increase from 31.89% for 2022.

The expected decline in net profit was primarily due to the company's increased investment in research and innovation for new products in the amino acid and derivatives business. That partially includes the establishment of a joint research institute with Jiangnan University, and expenditures on the research institute are going up.

On 13 March, Wuxi Jinghai announced it was recently granted food production licences for numerous products by the authority, with a validity period ending on 10 March, 2029. These products are in the food additives category. They are: food nutritional fortification substances, including L-Aspartic acid, L-Threonine, L-Serine, L-Glutamic acid, L-Glutamine, L-Proline, glycine, L-Alanine, L-Cystine, L-Cysteine hydrochloride monohydrate, L-Valine, L-Methionine, L-Leucine, L-Isoleucine, L-Tyrosine, L-Phenylalanine, L-Lysine hydrochloride, L-Lysine acetate, L-Arginine, L-Arginine hydrochloride, L-Histidine, L-Histidine hydrochloride monohydrate, L-Tryptophan, L-Citrulline and L-Ornithine hydrochloride.

Juneng Golden Corn and New Hope enter cooperation on amino acid R&D and popularisation

On 28 Feb., Shandong Shouguang Juneng Golden Corn Co., Ltd. (Juneng Golden Corn) and New Hope Liuhe Co., Ltd. (New Hope) signed a strategic cooperation agreement in Shouguang City, Shandong Province. At the signing ceremony, two parties had in-depth exchanges and discussions on biological fermentation, feed R&D and other fields.

According to their statement, in the future, two parties will collaborate on the R&D of new amino acid varieties, the popularisation of liquid lysine, and the combination in corn by-products application. Also, two parties will jointly push forward with industrial development projects





and research results transformation, build an innovation platform, and strengthen the sharing of R&D resources. These moves are proposed in order to comprehensively improve the research results transformation level as well as industrialisation level, and effectively improve their industrial competitiveness.



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Publisher : Kcomber Inc.

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