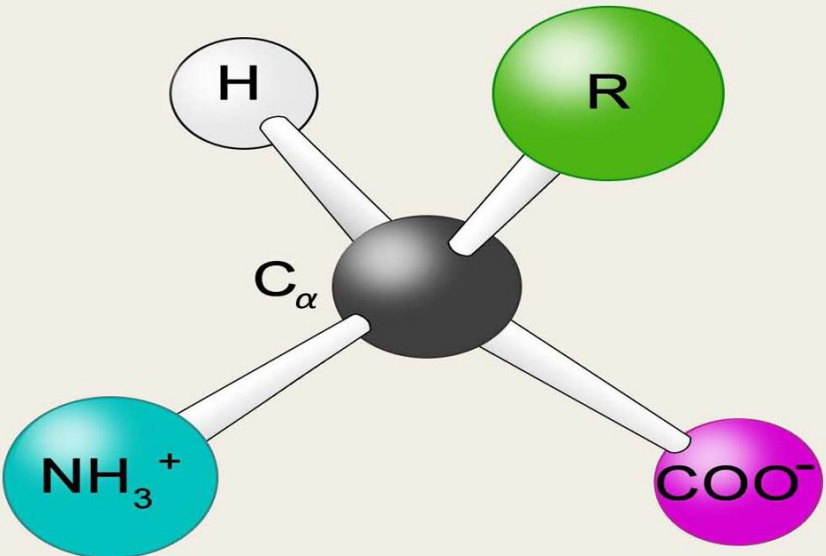
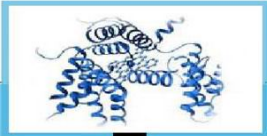


# Amino Acids China E-News 202204

Issue 4





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### Headline

In 2021, Tianyao Pharm achieved revenue of USD590.3 million (RMB3,749 million), up 20.3% YoY, and net profit attributable to shareholders of the listed companies of USD7.7 million (RMB49 million), up 43.23% YoY.

In mid-late March, Qiangyue Taida's production project of 2,500 t/a L-aspartic acid and 10,000 t/a fumaric acid, and Ningxia Eppen's product structure adjustment project of 4,000 t/a L-arginine were both publicised for environmental protection acceptance.

On 2 April, EIA report of Anhui Tiger's project of 1,000 t/a aminobutyric acid, 1,000 t/a alanine, 1,050 t/a bio-enzyme and 1,000 t/a nicotinic acid was publicised for soliciting public opinions.

On 31 March, 2022, Adisseo released the 2021 annual report, showing that its operating revenue went up along with the increasing sales revenue of liquid methionine.

On 22 March, 2022, Environmental Protection Acceptance Monitoring Report of Fucang Biotech's 2,000 t/a trace element additives of amino acid project was issued; on 31 March, 2022, environmental protection acceptance opinions of Jingjing Pharm's 2,200 t/a amino acid derivatives and 10 million packs of oral preparation project (Phase I) was published.

In 2021, Fufeng Group achieved a YoY increase of 29.1% in revenue and 38.7% in gross profit, and Huaheng Biotech realised a YoY rise of 95.8% in revenue and 38.9% in net profit attributable to shareholders of the listed companies according to their annual reports.

On 22 March, 2022, EIA report of Jiujiang Tianqi's 10,000 t/a amino acid powder project was publicised before being approved; on 19 April, 2022, EIA report of Lier Chemical's 10,000 t/a L-homoserine engineering construction project was issued for the first time for soliciting public opinions.

The ex-works price of lysine was on a "down-up" trend in Q1 2022, and continued the uptrend in April supported by high prices of raw materials.

In Jan.–Feb. 2022, export volumes of methionine and lysine ester and salt saw YoY rises, and export prices continued the uptrend.







### Editor's Note

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

Price: In Q1 2022, the price of lysine was on a "down-up" trend. The ex-works price of 70% lysine in Q1 2022 averaged at USD1,039/t, up 14.4% compared with USD908/t last year; 98% lysine's average ex-works price was USD1,956/t, up 10.2% YoY vs. 1,775/t in Q1 2021.

Company Dynamics:

- The EIA reports of Anhui Tiger's project of (1,000 t/a aminobutyric acid, 1,000 t/a alanine, 1,050 t/a bio-enzyme and 1,000 t/a nicotinic acid), Jiujiang Tianqi's 10,000 t/a amino acid powder project, Lier Chemical's 10,000 t/a L-homoserine engineering construction project were publicised.
- Qiangyue Taida's production project of 2,500 t/a L-aspartic acid and 10,000 t/a fumaric acid, and Ningxia Eppen's product structure adjustment project of 4,000 t/a L-arginine were both publicised for environmental protection acceptance. *Environmental Protection Acceptance Monitoring Report* of Fucang Biotech's 2,000 t/a trace element additives of amino acid project, and environmental protection acceptance opinions of Jingjing Pharm's 2,200 t/a amino acid derivatives and 10 million packs of oral preparation project (Phase I) were published.
- Tianyao Pharm released its performance report for 2021, with the revenue up 20.3% YoY, and net profit attributable to shareholders of the listed companies up 43.23% YoY.
- Adisseo released the 2021 annual report, showing that its operating revenue went up along with the increasing sales revenue of liquid methionine.
- Fufeng Group released the annual performance announcement of 2021, achieved a YoY increase of 29.1% in revenue and 38.7% in gross profit.
- Huaheng Biotech realised a YoY rise of 95.8% in revenue and 38.9% in net profit attributable to shareholders of the listed companies according to their annual reports.

Import & export: In Feb. 2022, China's export volume of methionine reached 5,376.79 tonnes, with a MoM drop of 69% but a YoY rise of 50%, and imported 11,580.064 tonnes of methionine, down by 28.20% YoY.

The USD/RMB exchange rate in this Report is USD1.00=CNY6.3509 on 1 April, 2022, sourced from the People's Bank of China. All the prices mentioned in this Report will include the VAT, unless otherwise specified.





## Governmental Direction

### Bio-economy Development Plan of Heilongjiang Province During the 14th Five-Year Plan Period

On 22 March, 2022, People's Government of Heilongjiang Province issued the *Bio-economy Development Plan of Heilongjiang Province During the 14th Five-Year Plan Period (2021–2025)*.

At present, Heilongjiang Province has production capacities of 1.31 million t/a amino acids and 1.85 million t/a fuel ethanol, which is the largest production base of bio-fermented amino acids and biomass fuel ethanol in China.

Build a national bio-fermented industry cluster, and a world-famous amino acid production base:

- Strengthen the layout of local industries in Qiqihar and Suihua cities etc., promote innovation, expansion and upgrading of projects such as Fufeng Biological Industrial Park, Xinhecheng Bio-fermentation Industrial Park and Zhaodong Xinghu Bio-fermentation Industrial Park, and accelerate the upgrading of advanced production capacity of corn fermentation industries such as inosine, guanosine, adenosine, lysine, glutamate, threonine and itaconic acid
- Introduce key enterprises with industry leading roles, jointly build a national amino acid industrial innovation center to develop high-end fermentation products such as isoleucine, valine, cysteine, taurine, lactic acid and folic acid so as to promote the expansion and upgrading of amino acid industry and establish the leading role of the national fermentation industry
- Actively introduce key enterprises, support leading enterprises and universities to jointly establish biofermentation industry research institutes, corn fermentation industry centre, establish bio-manufacturing core strains and key enzyme creation system, accelerate the development of biocatalysis and bioconversion, develop new products such as cellulase, protease, and other enzyme preparations, and expand the industrial application of enzyme products

Key points for fermentation industry development:

- Strain direction: select and transform to obtain microbial core high-yield strains for amino acid, enzyme, probiotic and edible bacteria etc., break through bottleneck technologies for microbial high-throughput screening, efficient preparation and high-density fermentation, and promote the industrialisation of the results
- Direction of enzyme preparation: develop new enzyme preparation products, and new nutritious and safe foods such as active peptides processed by enzyme method, oligosaccharides and special functional drinks, strengthen the synthesis and promotion of enzyme catalysed important industrial biochemicals
- Direction of fermented products: develop high-quality alcohol and electronic-grade anhydrous alcohol etc., enrich product line for small variety amino acid, expand amino acid industrial chain and increase types of organic acid products

Main amino acid producers in Heilongjiang Province:

- Heilongjiang Wanlirunda Biotechnology Co., Ltd.
- Heilongjiang Chengfu Food Group Co., Ltd.
- Qiqihar Longjiang Fufeng Biotechnology Co., Ltd.
- Yihai Kerry (Fuyu) Biotechnology Co., Ltd.
- Heilongjiang Eppen Biotech Co., Ltd.





## Market Analysis

### Tianyao Pharm's revenue and profit increase significantly

Summary: In 2021, Tianyao Pharm achieved revenue of USD590.3 million (RMB3,749 million), up 20.3% YoY, and net profit attributable to shareholders of the listed companies of USD7.7 million (RMB49 million), up 43.23% YoY.

On 30 March, 2022, Tianjin Tianyao Pharmaceutical Co., Ltd. (Tianyao Pharm, stock code: 600488.SH) released the 2021 annual performance report, which shows that the operating revenue totalled USD590.3 million (RMB3,749 million), up 20.3% YoY; net profit attributable to shareholders of the listed companies reached USD7.7 million (RMB49 million); the foreign exchange earned through export amounted to USD112 million.

In 2021, Tianyao Pharm made progress in drug registration at home and abroad and drug consistency evaluation etc., which means its market coverage is expected to be further expanded. Besides, Tianyao Pharm's drug R&D project is still advancing. At present, the company has rich reserves of research projects such as R&D of new product, FDA registration and drug consistency evaluation, which is of positive significance to promote its future performance growth.

According to Tianyao Pharm, in 2021, COVID-19 did have a certain impact on its production and operation, and its problems of lack of internal driving force etc. are mainly reflected in the following points:

- Ability to control changes in market is insufficient, and to deal with risks needs improving;
- Production statistics and analysis system is incomplete, and energy management and cost control need to be refined;
- Product cost is higher than that of the industry, and speed of tackling key technical problems needs accelerating.

**TABLE 1:** Performance figures of Tianyao Pharm, 2020–2021

Item	2021, million USD	2020, million USD	YoY change,%
Revenue	590.3	490.8	20.3
Net profit attributable to shareholders of listed companies	7.7	5.4	43.2
Net profit attributable to shareholders of listed companies after deducting non-recurring profits and losses	5.8	8.3	-29.5
Net cash flow from operating activities	49.9	54.6	-8.7

Source: Tianyao Pharm

Tianyao Pharm's market performance in 2021:

Domestic market:

- Regarding to active pharmaceutical ingredients (APIs), products with better profit margins should be given priority to occupy the market and products with thin profits should be expanded in sales and scale.
- Sales revenues of six varieties of preparations, including children's compound amino acid injection and fluorouracil injection etc.,





exceeded USD15.7 million.

- Amino acid (15) peritoneal dialysate obtained the approval document for drug registration.

International market:

- In terms of APIs, Tianyao Pharm flexibly lowered its prices and expanded its market shares in face of repeated COVID-19 outbreaks and declining demand from European and American customers.
- As for preparations, the company promoted the export business of tablets. In 2021, Tianyao Pharm's methylprednisolone tablets occupied a market share of over 30% in the US and ranked first.
- Valine API obtained the CEP certificate issued by European Directorate for the Quality of Medicines (EDQM), which was the first time that the amino acid API products of Tianyao Pharm had acquired the EU EDQM certification, realising the breakthrough that amino acid products had entered the mainstream market of developed countries.

Tianyao Pharm's performance analysis for amino acid products and regions in 2021:

- Revenue of amino acid went up YoY, mainly due to the company's strengthened sales efforts of amino acid products, resulting in increased sales volume and higher prices for some amino acid products; however, the YoY decrease in gross profit margin primarily caused by the rising raw material prices of some products.
- Revenues in South China and East China increased significantly compared with the same period last year, mainly because sales volume of preparations weren't ideal affected by COVID-19 in 2020, and sales volume tended to be stable this year.
- Revenue and gross profit margin in North China saw YoY drops mainly affected by product structure and centralised purchase of products.
- Export revenue decreased YoY, primarily caused by overseas COVID-19 epidemic and decreasing product prices because of fierce market competition.







TABLE 2: Performance figures of Tianyao Pharm's main businesses by product and region, 2021

By product				
Product	Revenue, million USD	YoY change, %	Gross profit margin, %	YoY change, %
Steroid hormones	259.7	13.8	23.0	-3.7
Amino acids	75.8	20.0	50.6	-1.1
Others	252.7	27.8	72.4	5.3
By region				
Region	Revenue, million USD	YoY change, %	Gross profit margin, %	YoY change, %
South China	194.8	50.9	60.9	0.2
North China	96.2	-4.9	55.4	-7.5
East China	180.7	45.2	57.7	0.1
Export	116.5	-13.3	4.1	-5.3

Source: Tianyao Pharm

TABLE 3: Production and sales of Tianyao Pharm's products, 2021

Main products	Output	Sales volume	Inventory
Amino acid API, tonne	2,380.1	3,306.7	455.9
Corticosteroid API, tonne	277.6	250.8	41.9
Intermediate, tonne	26.8	214.9	5.2
Preparation, million pieces	1,445.0	1,471.8	220.9

Source: Tianyao Pharm

### Projects of Qiangyue Taida and Ningxia Eppen issued for environmental protection acceptance

Summary: In mid-late March, Qiangyue Taida's production project of 2,500 t/a L-aspartic acid and 10,000 t/a fumaric acid, and Ningxia Eppen's product structure adjustment project of 4,000 t/a L-arginine were both publicised for environmental protection acceptance.

During 28 March–24 April, Fenyang Qiangyue Taida Biotechnology Co., Ltd. (Qiangyue Taida)'s production project of 2,500 t/a L-aspartic acid and 10,000 t/a fumaric acid was issued for environmental protection acceptance. The project started construction in March 2017, and its engineering content and supporting environmental protection facilities were completed and commissioned in Sept. 2021.



**Project overview:**

- Project nature: New construction
- Location: Sanquan Town Industrial Park, Sanquan Town, Fenyang City, Shanxi Province
- Investment: USD22.45 million (RMB142.56 million); USD0.60 million (RMB3.81 million) for environmental protection, 2.67% of the total
- Construction scale:
  - Designed capacity: 20,000 t/a fumaric acid, 5,000 t/a L-aspartic acid
  - Actual capacity: 10,000 t/a fumaric acid, 2,500 t/a L-aspartic acid
- Production technique for L-aspartic acid:
  - As a deep processing project of self-produced fumaric acid, L-aspartic acid manufacturing adopts the enzyme engineering technology in the field of bioengineering, whose conversion rate and product yield of fumaric acid are over 99%.
  - L-aspartic acid is produced by the reaction of fumaric acid and ammonia under the catalytic action of bio-enzyme, through processes of decolourisation, cooling, crystallisation & precipitation, drying and packaging.
- Working system: 50 employees working in three 8-hour shifts for 300 working days in a year
- On-site acceptance monitoring time: 27–29 Dec., 2021

On 14 March, Ningxia Eppen Biotech Co., Ltd. (Ningxia Eppen)'s product structure adjustment project of 4,000 t/a L-arginine was publicised for environmental protection acceptance.

**Project overview:**

- Project nature: Technical renovation
- Location: At existing plant of Ningxia Eppen, Yinchuan City, Ningxia Hui Autonomous Region
- Investment: USD7.87 million (RMB50 million); USD0.26 million (RMB1.64 million) for environmental protection, 3.28% of the total
- Construction specification: 3,500 t/a L-tryptophan fermentation workshop and finished product workshop of Ningxia Eppen are used for technical upgrading and transformation, mainly to transform the original L-tryptophan production lines into fermentation workshop and finished product workshop of L-arginine project, with only some parts of workshops renovated and corresponding equipment added.
- Production technique: Seed culture (with concentrated sugar as medium)—fermentation—acidification—ceramic membrane—continuous dissociation—deamination & concentration—dissociation & decolourisation—concentration & crystallisation—drying—packaging to get finished L-arginine
- Main raw material: 23,800 t/a concentrated sugar (outsourced), 6,270 t/a ammonia (outsourced), etc.
- Product scheme: 4,000 t/a feed-grade L-arginine
- Working system: 93 staff working in three 8-hour shifts for 330 working days within a year
- On-site acceptance monitoring time: 18–19 Dec., 2021

Ningxia Eppen has two tryptophan production lines, i.e. the 1,000 t/a L-tryptophan production line and the 2,500 t/a L-tryptophan production line. The strains used in tryptophan fermentation section in the metabolic process produce a certain amount of indole, which can lead to bad odours when accumulated due to the inability to synthesise tryptophan timely. Therefore, Ningxia Eppen shut down the two tryptophan production lines in June 2018.

**EIA report publicity of Anhui Tiger's 1,000 t/a aminobutyric acid & 1,000 t/a alanine project**



Summary: On 2 April, EIA report of Anhui Tiger's project of 1,000 t/a aminobutyric acid, 1,000 t/a alanine, 1,050 t/a bio-enzyme and 1,000 t/a nicotinic acid was publicised for soliciting public opinions.

On 2 April, Environmental Impact Assessment (EIA) report of Anhui Tiger Biotechnology Co., Ltd. (Anhui Tiger)'s project of 1,000 t/a aminobutyric acid, 1,000 t/a alanine, 1,050 t/a bio-enzyme and 1,000 t/a nicotinic acid was publicised for soliciting public opinions. And the first publicity was on 24 March.

#### Project overview:

- Nature: Expansion
- Location: Economic Development Zone of Guzhen County, Guzhen County, Bengbu City, Anhui Province
- Total investment: USD6.61 million (RMB42 million); USD0.31 million (RMB2 million) for environment protection, 4.76% of the total
- Production technique:
  - Aminobutyric acid: manufactured by crude glutamic acid through hydrolysis, filter pressing, decolorization, filtration, crystallisation & centrifugation and drying processes
  - Alanine: produced by alanine via dissolution, condensation & evaporation, crystallisation & centrifugation and drying processes
- Working system:
  - Working in three 8-hour shifts for 300 working days in a year
  - Staff are deployed within the plant without new ones added.
- Construction period: two years; expected to be put into operation in 2024  
Estimated product sales: USD4.13 million (RMB26.25 million)

**TABLE 4:** Main raw material consumption of the project

Product	Main raw materials	Annual consumption, t/a
Alanine	98% crude alanine	1,100
Aminobutyric acid	95% glutamic acid	1,600
Nicotinic acid	3-cyanopyridine	900
Bio-enzyme	Glycerol	700

Source: Anhui Tiger

Founded on 27 March, 2017 with a registered capital of USD10.55 million (RMB67 million), Anhui Tiger is a sub-subsidiary of China BBKA Group Corp., which provides raw materials for the project.



**TABLE 5:** Existing projects of Anhui Tiger

Project	Product	Capacity, t/a	Remark
6,000 t/a calcium pantothenate	D-calcium pantothenate	6,000	For sale
25,000 t/a recycled lactic acid	95% lactic acid	25,000	Delivered to Anhui BBKA Futero Lactic Acid Co., Ltd.
	98% D-calcium pantothenate	6,000	
1,000 t/a dexpanthenol and 5,000 t/a nicotinamide	Dexpanthenol	700	New capacity of D-(-)-pantolactone for dexpanthenol production
	DL-panthenol	300	
	Nicotinamide	5,000	For sale

Source: Anhui Tiger

### Adisseo's operating revenue rises along with its increasing sales revenue of liquid methionine

Summary: On 31 March, 2022, Adisseo released the 2021 annual report, showing that its operating revenue went up along with the increasing sales revenue of liquid methionine.

On 31 March, 2022, Bluestar Adisseo Co., Ltd. (Adisseo) released its 2021 annual report. According to the report, Adisseo's operating revenue increased by 8.05% YoY, mainly due to increases of 23% and 12% in sales revenues of liquid methionine and specialty products respectively. In addition, proactive product price management, agile and rapid product supply and continuous operation efficiency improvement plan successfully helped Adisseo partially offset adverse impacts from sharp rises in raw material and energy costs in 2021, especially in Q4.

**TABLE 6:** Adisseo's main financial figures in 2021, million USD

Item	2021	2020	YoY change
Operating income	2,026	1,875	8.05%
Net profit attributable to shareholders of listed companies	232	213	8.88%
Net cash flow from operating activities	410	426	-3.93%
Item	As of 31 Dec., 2021	As of 31 Dec., 2020	YoY change
Total assets	3,292	3,246	1.40%
Net assets attributable to shareholders of listed companies	2,219	2,197	1.01%

Source: Adisseo & CCM



**TABLE 7:** 2021 performance figures of Adisseo by product category, million USD

Product	Operating income	YoY change	Gross profit margin	YoY change	Operating cost
Functional products (methionine, methionine hydroxy analogue, vitamin, ammonium sulfate, sodium sulfate)	1,428	6%	30%	-4%	1,000
Specialty products (enzyme preparation, ruminant methionine, organic selenium additive, probiotic product, etc.)	498	12%	49%	-1%	256
Others (carbon disulfide, sulfuric acid and preparation services)	100	12%	20%	-10%	79
Total	2,026	8%	34%	-4%	1,334

Source: Adisseo & CCM

#### Analysis of methionine market in 2021:

- In 2021, the global situation improved in terms of supply. After production interruption in Q1, maintenance shutdown in Q2 and energy control in Q3 in China, most manufacturers gradually recovered to normal production levels.
  - Affected by the anti-dumping case of the United States and the limitation of global logistics, the methionine supply of different global manufacturers was being restructured among regions.
  - Rising prices of key raw materials continued to bring pressure to methionine production.
  - In terms of logistics, problems of shipping delay, insufficient container or shipping space, port congestion and lack of truck drivers weren't solved, which brought greater pressure to the global methionine supply chain. As shipping prices continue to soar, this situation of logistics may last until the end of 2022.
- Global demand situation was stable. The demand for liquid methionine in Europe, North America and Latin America remained strong. Although the markets in China and some Asian countries were weak in Q3, the markets in North America, Europe, Latin America and even the Middle East and Africa were very flexible in 2021.

#### Methionine market's good prospect:

- Affected by population growth, economic level improvement of developing countries and continuous development of modern livestock breeding industry, the demand for methionine in the Asia Pacific region, including China, has increased rapidly. As China's pork, poultry and livestock production scale ranks forefront worldwide, relevant breeding industries have maintained rapid development, driving the rapid growth of methionine demand despite aftermaths of COVID-19.
- At present, there is a strong demand for methionine in all regions. The global market demand has reached 1.5 million tonnes, and the normal growth of the market means that there will be an additional demand of about 200,000 tonnes for methionine in two years.
- In order to strengthen the existing market position, international industry giants have gradually increased their investment in Asia in the past few years. Benefiting from the successful completion of European expansion projects and Chinese projects, Adisseo consolidated its global market share and ranked second in 2021.

#### Adisseo further expands methionine production capacity in China:

The Phase II project of Nanjing plant with a capacity of 180,000 t/a liquid methionine goes smoothly, with civil engineering and 99% construction progress completed and pre-commissioning stage launched. The project will start trial operation in H2 2022, and the total capacity of Nanjing plant will be expanded to 360,000 t/a at that time.





## Company Dynamics

### Projects of Fucang Biotech and Jingjing Pharm completed and accepted

Summary: On 22 March, 2022, *Environmental Protection Acceptance Monitoring Report* of Fucang Biotech's 2,000 t/a trace element additives of amino acid project was issued; on 31 March, 2022, environmental protection acceptance opinions of Jingjing Pharm's 2,200 t/a amino acid derivatives and 10 million packs of oral preparation project (Phase I) was published.

On 22 March, 2022, *Environmental Protection Acceptance Monitoring Report* of Jiangxi Fucang Biotechnology Co., Ltd. (Fucang Biotech)'s 2,000 t/a trace element additives of amino acid project was issued on the national construction project environmental information platform during 22 March–20 April, 2022. And environmental impact assessment (EIA) of the project was publicised on Jan. 2022.

#### Project overview:

- Project type: New construction
- Total investment: USD3.15 million (RMB20 million); USD39,364.50 (RMB250,000) for environmental protection, 1.25% of the total
- Floor area: 6,800 m<sup>2</sup>
- Project site: Honghua Industrial Park, Jingtangshan City, Ji'an City, Jiangxi Province
- Actual construction content: Build a new production line for trace element additives of amino acid
- Actual production capacity:
  - 1,000 t/a ferrous bisglycinate
  - 400 t/a zinc glycinate
  - 200 t/a copper glycinate
  - 200 t/a ferrous methionine
  - 100 t/a zinc methionine
  - 50 t/a copper methionine
  - 50 t/a manganese methionine
- Production process: Raw material mixing & fusing—complexation reaction—crystallisation—centrifugal separation—drying—screening
- Working system: 20 employees working in three 8-hour shifts for 300 days in a year
- EIA approval time: Dec. 2021
- Commencement time: Jan. 2022
- On-site acceptance monitoring time: 24–25 Feb., 2022





TABLE 8: Raw material consumption of the project

No.	Raw material	Annual consumption, t/a
1	Glycine	400
2	Methionine	100
3	Ferrous sulfate	800
4	Zinc sulphate	450
5	Others	250.2

Source: Fucang Biotech

On 31 March, 2022, environmental protection acceptance opinions of Jingjing Pharmaceutical Co., Ltd. (Jingjing Pharm)'s 2,200 t/a amino acid derivatives and 10 million packs of oral preparation project (Phase I) was published. Due to financial problems, Jingjing Pharm decided to build the project in two phases.

#### Project overview:

- Nature: Expansion
- Total investment (Phase I): USD13.38 million (RMB85 million); USD0.39 million (RMB2.50 million) for environmental protection, 2.94% of the total
- Location: West Zone of Industrial Cluster Area, Dacaozhuang Management District, Ningjin County, Xingtai City, Hebei Province
- Floor area: 279,000 m<sup>2</sup>
- Construction content:
  - Phase I: Add "aerobic tank + MBR membrane treatment + constructed wetland" advanced treatment techniques on the existing ones, and build compound salt workshop and other auxiliary facilities
  - Phase II: Build refining workshop, preparation workshop, warehouse, power workshop, etc.
- Product scheme:
  - Phase I: 520 t/a calcium pantothenate, 100 t/a N-acetyl-L-tyrosine, 100 t/a calcium aspartate, 300 t/a  $\gamma$ -aminobutyric acid, 100 t/a monosodium fumarate, 100 t/a iron(II) fumarate
  - Phase II: 480 t/a L-glutamine, 300 t/a L-carnitine, 200 t/a acetyl L-carnitine, 10 million packs of oral preparation
- Commencement time (Phase I): March 2021
- Completion and commissioning time (Phase I): Feb. 2022

### Fufeng Group and Huaheng Biotech perform well in 2021

Summary: In 2021, Fufeng Group achieved a YoY increase of 29.1% in revenue and 38.7% in gross profit, and Huaheng Biotech realised a YoY rise of 95.8% in revenue and 38.9% in net profit attributable to shareholders of the listed companies according to their annual reports.

On 30 March, 2022, Fufeng Group Co., Ltd. (Fufeng Group, stock code: 00546.HK) released its annual report for 2021. According to the report, the revenue totalled USD3.4 billion (RMB21.5 billion) with a rise of 29.1% YoY, mainly boosted by increasing revenues of food





additive, animal nutrition product (threonine, lysine and corn refined product) and high-end amino acid; the gross profit reached USD0.6 billion (RMB3.9 billion), up 38.7% YoY, primarily because of rising gross profits of animal nutrition product and high-end amino acid.

In 2021, the product revenues of Fufeng Group achieved positive growths:

- Food additives achieved a revenue of USD1.6 billion (RMB10.4 billion), up 14.7% YoY. Thereinto, monosodium glutamate (MSG) made a revenue of USD1.3 billion (RMB8.5 billion) with a YoY increase of 18.4%, 40% of the total revenue, driven by the increasing average selling price of MSG in 2021;
- Revenue of animal nutrition products was USD1.2 billion (RMB7.6 billion), up 50.3% YoY, driven by revenue increases from threonine and lysine;
- Revenue of high-end amino acid reached USD0.2 billion (RMB1.4 billion), up by 50% YoY. Reasons for the increase are as follows:
  - Improvements in production technology to increase production efficiency and output;
  - Increasing sales of tryptophan, isoleucine and branched chain amino acid;
  - New product launches, such as theanine, erythritol and polyglutamic acid etc.

**TABLE 9:** Sales revenue of Fufeng Group by product, 2021 vs. 2020, million USD

Product	2021	2020	YoY change
MSG	1,340.9	1,132.4	18.40%
Glutamic acid	57.7	65.6	-12.00%
Threonine	377.1	201.5	87.10%
Lysine	259.4	153.4	69.10%
High-end amino acid products	222.9	148.5	50.00%

Source:Fufeng Group

**TABLE 10:** Designed capacity of Fufeng Group's main products, 2021, t/a

No.	Product	Capacity
1	MSG	1,330,000
2	Threonine	243,000
3	Lysine	200,000

Source:Fufeng Group

On 20 April, 2022, Anhui Huaheng Biotechnology Co., Ltd. (Huaheng Biotech, stock code: 688639.SH) publicised its 2021 annual report, showing that the revenue totalled USD150.2 million (RMB954 million), up 95.8% YoY; the net profit attributable to the shareholders of the listed companies reached USD26.5 million (RMB168 million), up 38.9% YoY. Thereinto, the revenue and net profit attributable to the shareholders of the listed companies in Q4 2021 was USD52.4 million (RMB333 million) and USD10.4 million (RMB66 million)







respectively, up by 162.8% and 84.1% YoY.

According to Huaheng Biotech, purchase prices of main raw materials (including starch, glucose, L-aspartic acid and ammonia, etc.) used in production showed a certain increase in 2021 affected by rising prices of bulk commodities, and its operating performance will be negatively impacted if prices of main raw materials continue to rise and it fails to take effective measures to deal with that in future. And in 2022, it will continue to speed up the 16,000 t/a three branched chain amino acid and its derivatives project in Bayannur base and the  $\beta$ -alanine derivatives (D-calcium pantothenate and dexpanthenol) project in Changfeng base, improve product capacity, types of three branched chain amino acid products and upstream technology of related products, and continuously enhance comprehensive competitiveness of products.

Progress of Huaheng Biotech's invested projects in 2021:

- The alternate 25,000 t/a alanine and valine project in Bayannur City has been partially put into operation, further enriching the company's product range, enhancing its core competitiveness in the field of animal nutrition and expanding the diversification of its main business.
- 5,000 t/a L-alanine project in Qinhuangdao City has expanded production, which further consolidates the company's position in alanine-related industries and increase its competitive advantages.

**TABLE 11:** Financial figures of Huaheng Biotech's main business by product, 2021

Item	Revenue, million USD	YoY change	Gross profit margin	YoY change
Amino acid products	126.9	92.0%	35.6%	-5.2%
Others	5.7	-22.9%	28.8%	-23.6%

Source:Huaheng Biotech

**TABLE 12:** Production and sales of Huaheng Biotech's amino acid products, 2021, tonne

Product	Yield	YoY change	Sales volume	YoY change	Inventory	YoY change
Amino acid products	48,999.7	95.7%	47,942.5	78.7%	2,889.6	32.6%

Source:Huaheng Biotech

### EIA report publicity of projects from Jiujiang Tianqi and Lier Chemical

Summary: On 22 March, 2022, EIA report of Jiujiang Tianqi's 10,000 t/a amino acid powder project was publicised before being approved; on 19 April, 2022, EIA report of Lier Chemical's 10,000 t/a L-homoserine engineering construction project was issued for the first time for soliciting public opinions.

On 22 March 2022, environmental impact assessment (EIA) report of Jiujiang Tianqi Fluorine Silicon New Material Technology Co., Ltd. (Jiujiang Tianqi)'s 10,000 t/a amino acid powder project was publicised before being approved.



**Project overview:**

- Nature: New construction
- Location: Hukou County, Jiujiang City, Jiangxi Province
- Floor area: 92,287 m<sup>2</sup>
- Investment: USD94.95 million (RMB603 million) in total, including USD58.57 million (RMB372 million) for Phase I and USD36.22 million (RMB230 million) for Phase II; USD6.34 million (RMB40.25 million) for environmental protection
- Construction content:
  - Build 3 production workshops, 4 warehouses, 3 storage tank farms, utilities and environmental protection facilities
  - Set up 7 production lines for amino acid powder, including 3 in Phase I and 4 in Phase II
- Working schedule:
  - three 8-hour shifts per day for 300 working days in a year
  - 96 new staff, including 42 in Phase I and 54 in Phase II

**TABLE 13:** Product scheme of the project

No.	Product	Annual output of Phase I, tonne	Annual output of Phase II, tonne	Total, tonne
1	Amino acid powder	3,000	7,000	10,000
2	Sodium methyltaurate	10,000	20,000	30,000
3	Sodium hydroxypropyl sulfonate	5,000	0	5,000
4	Sodium isethionate	3,000	7,000	10,000
5	Taurine	0	10,000	10,000

Source: Jiujiang Tianqi & CCM

Established in April 2015 with a registered capital of USD21.10 million (RMB134 million), Jiujiang Tianqi mainly focuses on research, manufacturing, processing, wholesale and retail of fluorine-containing materials & related electronic chemicals, silicone series materials, fluorosilicone series modified materials, etc.

On 19 April, 2022, EIA report of Guang'an Lier Chemical Co., Ltd. (Lier Chemical)'s 10,000 t/a L-homoserine engineering construction project was issued for the first time for soliciting public opinions.

**Project overview:**

- Nature: Expansion
- Location: Xinqiao Industrial Park, Guang'an Economic & Technological Development Zone, Guang'an City, Sichuan Province
- Floor area: 66,000 m<sup>2</sup>
- Planned investment: USD6.30 million (RMB40 million)
- Construction content: L-homoserine production workshop will be built on the existing land, and relevant supporting projects such as roads, pipeline gallery and auxiliary rooms will be built.





Founded in April 2014 with a registered capital of USD55.11 million (RMB350 million), Lier Chemical mainly engages in pesticide production and production & operation of hazardous chemicals etc.





## Price Update

## The prices of major amino acid varieties in China, April 2022

TABLE 14: The prices of major amino acid varieties in China, March–April 2022

Product	Price in April 2022, USD/t	Price in March 2022, USD/t	MoM change
98.5% Lysine	1,992	1,950	2.13%
70% Lysine	1,110	1,091	1.71%
98% Tryptophan	8,778	8,728	0.57%
Methionine (liquid)	2,866	2,936	-2.39%
Methionine (solid)	3,390	3,443	-1.55%
99% Threonine	1,889	1,879	0.56%

Source:CCM

## Ex-works price of lysine shows an overall uptrend in Jan.–April 2022

Summary: The ex-works price of lysine was on a "down–up" trend in Q1 2022, and continued the uptrend in April supported by high prices of raw materials.

In Q1 2022, the ex-works price of lysine was on a "down–up" trend. Ex-works price of 70% lysine in Q1 2022 averaged at USD1,039/t, up 14.4% compared with USD908/t last year; 98% lysine's average ex-works price was USD1,956/t, up 10.2% YoY vs. 1,775/t in Q1 2021. Thereinto, the lysine market was sluggish in Jan. with downstream demand and market confidence weakening before the Spring Festival holiday, driving down the price significantly. However, the lysine market picked up in March, boosted by the rising price of soybean meal.

Reasons for the "down–up" trend of lysine price:

- High price of corn supporting the cost of lysine:
  - Since 2022, the market price of corn has continued to rise, supporting the production cost of lysine. According to the survey of CCM, the average price of corn in China was USD410/t in Q1 2022, up 5.8% vs. USD387/t in Q4 2021. In Q1 2022, production cost of lysine went up caused by rising price of corn, and producers were reluctant to lower their prices. As a result, the price of lysine saw a limited decline in Jan. despite the weak demand.
- Supply of lysine tightening domestically because of the strong export demand:
  - In Q4 2021, customers were strongly willing to sign bills because of overseas stocking demand and high spot price in Europe, and shipping capacity got insufficient and shipping price continued to go up affected by COVID-19. Besides, in Q1 2022, domestic spot supply tightened in China caused by strong lysine export demand and producers weren't willing to lower their prices. According to the customs data, the export volume of lysine ester and salt totalled 162,884 tonnes in Jan.–Feb., 2022, up by 31.7% from 123,700 tonnes in Jan.–Feb., 2021.

In April, the ex-works price of 70% lysine was USD1,110/t, up 1.7% MoM and 30% YoY; the ex-works price of 98.5% lysine reached



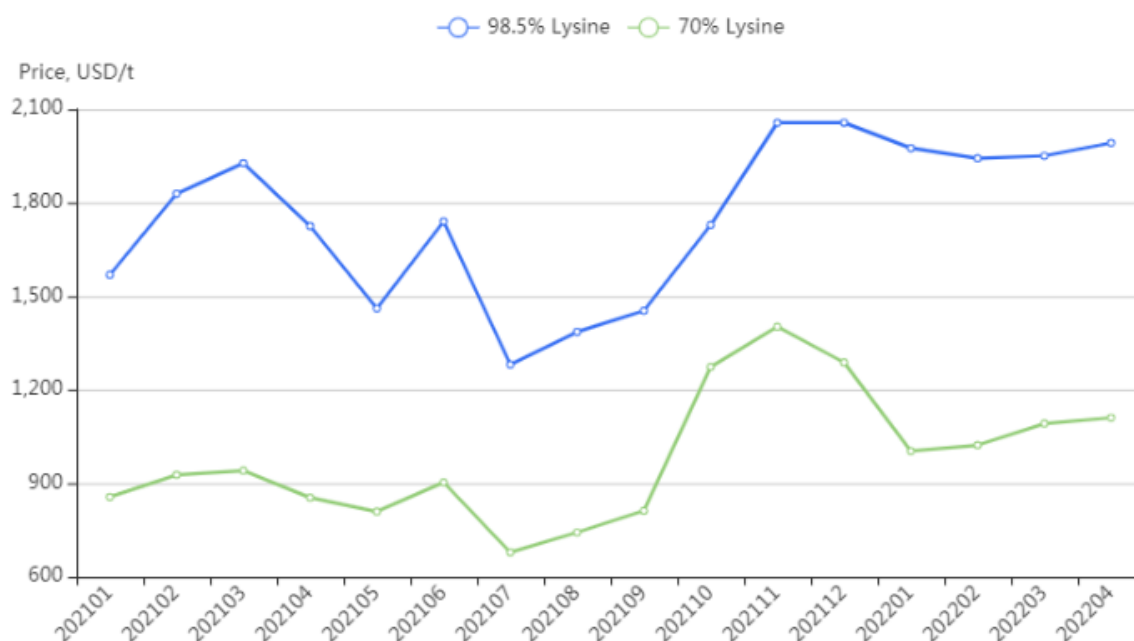


USD1,992/t, up 2.1% MoM and 15.4% YoY. Reasons for the price rise in April: for one thing, the price of corn rose to USD431/t, up 0.2% MoM and 4.7% YoY; for another, transportations in Northeast and Shandong production areas were blocked and producers weren't willing to cut their prices.

Lysine's ex-works price to fluctuate at a high level in future due to strong export demand:

Overall, lysine export momentum is good, which supports its domestic market. Moreover, prices of feed raw materials stay high and lysine's addition increases, which is conducive to boosting the market demand for lysine. And producers are reluctant to lower their prices of lysine for their inventory pressures are not high currently. However, due to the high price of lysine, the downstream enterprises only purchase lysine to meet their rigid demand. Therefore, the price of lysine is expected to fluctuate at a high level in future.

FIGURE 1: Ex-works prices of lysine in China, Jan. 2021–April 2022

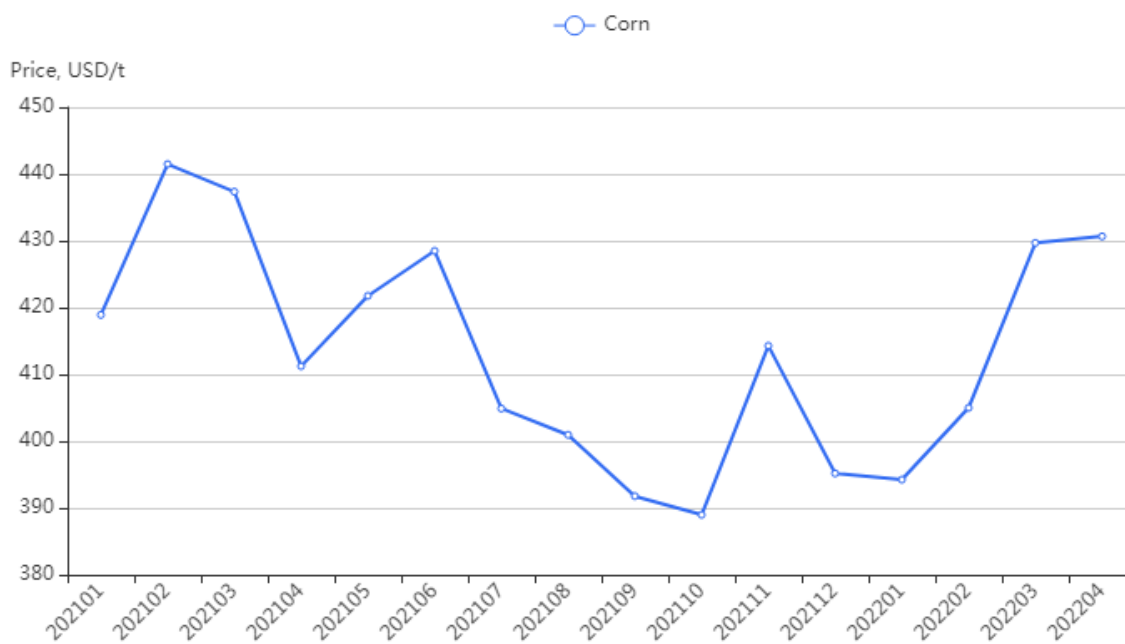


Source:CCM



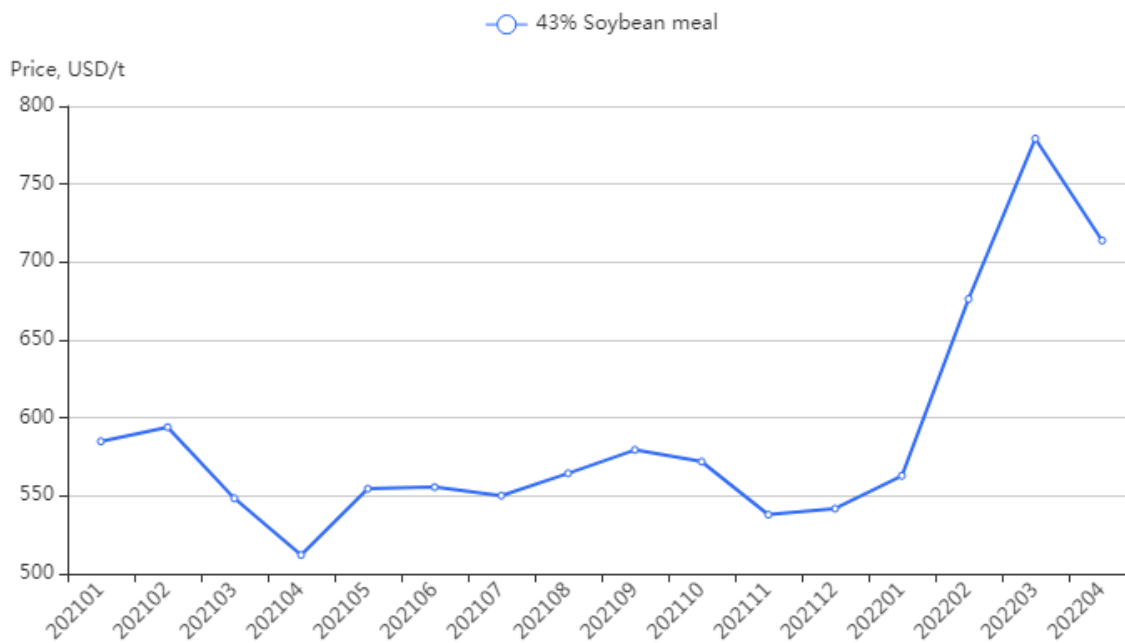


FIGURE 2: Market prices of corn in China, Jan. 2021–April 2022



Source:CCM

FIGURE 3: Market prices of soybean meal in China, Jan. 2021–April 2022



Source:CCM



## Import and Export

### Import and export data of five amino acid varieties in China, Feb. 2022

**TABLE 15:** Import and export data of five amino acid varieties in China, Feb. 2022

Product	Import volume, tonne	MoM change	Import value, USD	MoM change
Lysine	0.224	/	67,977	/
Lysine ester and salt	112.085	27712.66%	242,243	822.02%
Methionine	11,580.064	-30.45%	27,352,684	-28.20%
Glutamic acid	0.177	/	4,673	/
Cystine	0.718	/	50,987	/
Product	Export volume, tonne	MoM change	Export value, USD	MoM change
Lysine	13.050	140.33%	151,369	54.64%
Lysine ester and salt	85,366.970	10.13%	137,273,172	16.89%
Methionine	5,376.793	-68.91%	14,528,239	-66.18%
Glutamic acid	4,229.554	-21.08%	5,978,542	-18.75%
Cystine	49.391	76.30%	992,844	64.88%

Source: China Customs & CCM

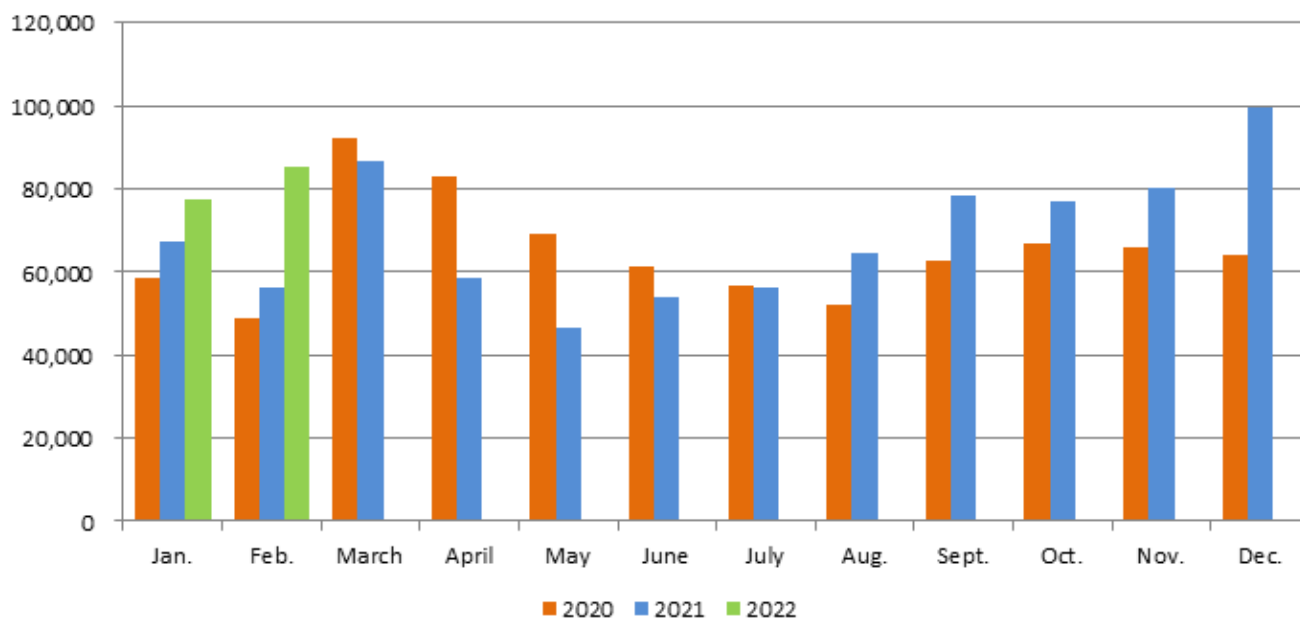
### Brief analysis of China's exports of methionine and lysine ester and salt

Summary: In Jan.–Feb. 2022, export volumes of methionine and lysine ester and salt saw YoY rises, and export prices continued the uptrend.

Data from China Customs shows that in Feb. 2022, China's export volume of lysine ester and salt totaled 85,366.97 tonnes, up by 10% MoM and 51% YoY. In Jan. 2022, the export volume of lysine ester and salt was 77,517.39 tonnes, with a MoM decrease of 22% and a YoY increase of 15%. During Aug. 2021–Feb. 2022, the monthly export volume of lysine ester and salt maintained a MoM growth, with the export volume in Feb. 2022 far exceeding 48,761.98 tonnes in 2020 and 56,442.37 tonnes in 2021, mainly driven by overseas severe epidemic situation and strong demand.



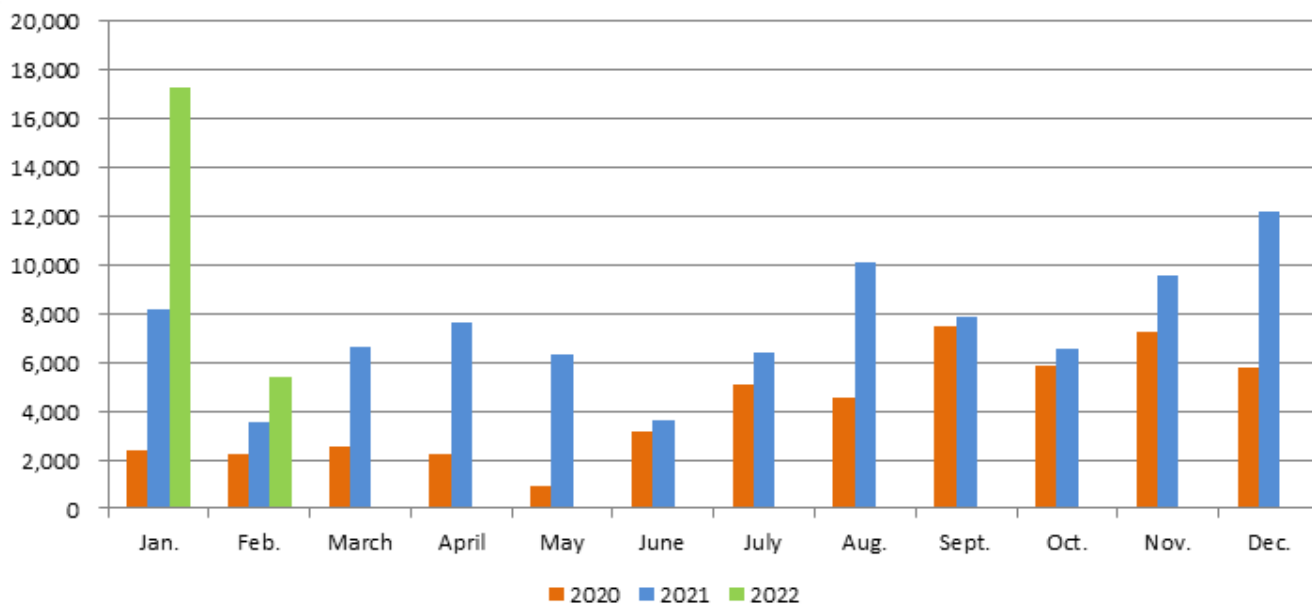
PICTURE 1: Comparison of monthly export volume of China's lysine ester and salt, Jan. 2020–Feb. 2022, tonne



Source:China Customs & CCM

In Feb. 2022, China's export volume of methionine reached 5,376.79 tonnes, with a MoM drop of 69% but a YoY rise of 50%. In Jan. 2022, the export volume of methionine amounted to 17,292.80 tonnes, up 42% MoM and 112% YoY, hitting a record high. During Jan. 2021–Feb. 2022, methionine's monthly export volume witnessed YoY increases.

FIGURE 4: Comparison of monthly export volume of China's methionine, Jan. 2020–Feb. 2022, tonne



Source:China Customs & CCM

According to the data of China Customs, monthly export prices of lysine ester and salt in 2021 were higher than those in 2020. In 2022, export prices of lysine ester and salt reached new highs in Jan. and Feb. In Jan. 2022, the export price of lysine ester and salt was USD1,515.03/t, up 16% MoM and 58% YoY. In Feb. 2022, the export price of lysine ester and salt reached USD1608.04/t, with a MoM



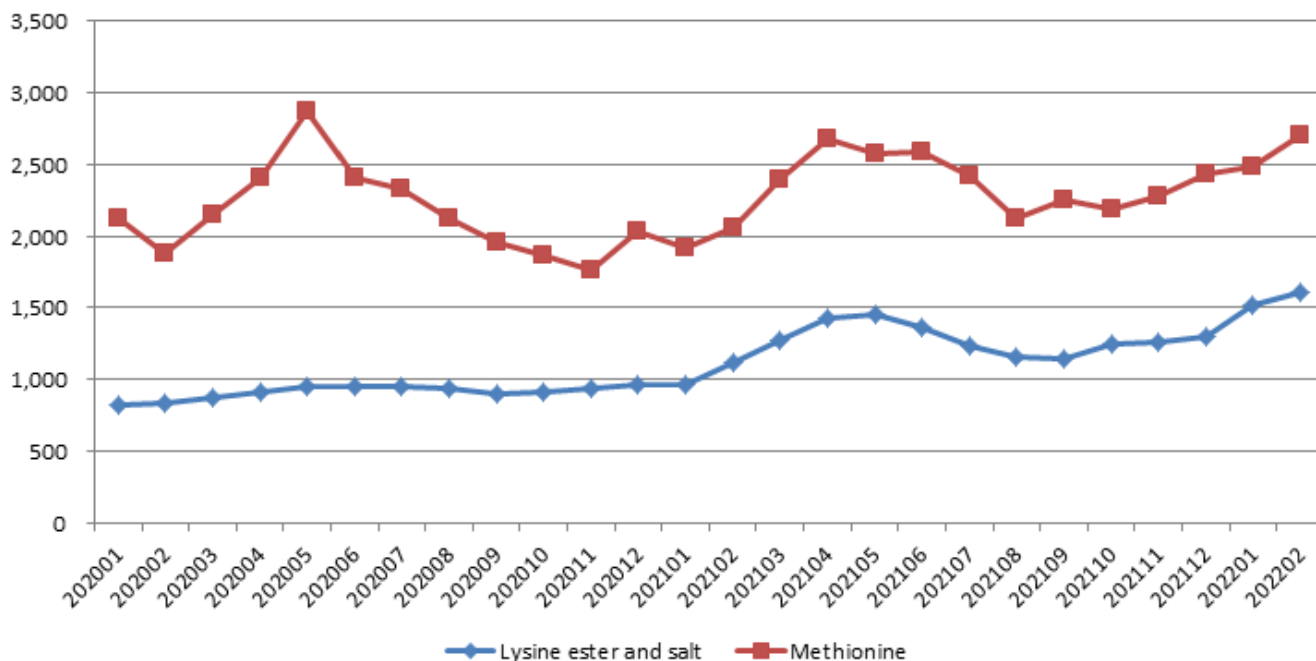




rise of 6% and a YoY increase of 45%. And on 24 Feb., 2022, as Russia-Ukraine war outbreak, the price of corn went up with fluctuations, supporting the price of amino acid.

In Feb. 2022, export price of methionine was USD2,702.03/t, up 9% MoM and 31% YoY, continuing the uptrend seen since Sept. 2021, very close to the high point of monthly methionine price of USD2,867.10/t in 2020.

PICTURE 2: Monthly export price of methionine and lysine ester and salt, Jan. 2020–Feb. 2022, USD/t



Source: China Customs & CCM





## News in Brief

**EIA of Shixing Amino Acid's project of 600 t/a food-grade glycine & glutamic acid approved**

On 12 April, the EIA report of Shijiazhuang Shixing Amino Acid Co., Ltd. (Shixing Amino Acid)'s technical renovation & expansion project of 600 t/a food-grade glycine and glutamic acid was approved by Administrative Examination and Approval Bureau of Gaocheng District in Shijiazhuang City. On 28 March, this EIA report was accepted and publicised.

## Project overview:

- Nature: Technical renovation & expansion
- Location: Gaocheng District, Shijiazhuang City, Hebei Province
- Floor area: 4,247 m<sup>2</sup>
- Total investment: USD0.63 million (RMB4 million); USD0.02 million (RMB0.10 million) for environmental protection
- Production technique: To produce 600 t/a food-grade glycine and glutamic acid with crude glycine & glutamic acid processed through mixing, filtering & purification, crystallisation, centrifugation, drying, sieving and packing procedures.
- Working system:
  - A new production staff of 9 employed
  - 300 working days in a year
- Construction period: 3 months

Established on 7 July, 1997 with a registered capital of USD1.07 million (RMB6.80 million), Shixing Amino Acid has an existing capacity of 240 t/a food-grade amino acids. Its business scopes include production and sales of food additives (only food-grade amino acid), compound food additives, feed additives, etc.

**Huamao Fine Chemical releases statement of changes in environmental impact of the 100 t/a L-tert-leucine project**

On 26 March, Zhangjiagang Huamao Fine Chemical Co., Ltd. (Huamao Fine Chemical) released the statement of changes in environmental impact of the technical innovation and expansion project of 100 t/a L-tert-leucine. The project has been completed, with partial adjustment during the process.

## Project overview:

- Nature: Technical innovation and expansion
- Total investment: USD 2.83 million (RMB18 million); USD 0.91 million (RMB5.80 million) for environmental protection
- Location: Yangtze River International Chemical Industry Park, Zhangjiagang Bonded Zone, Jiangsu Province
- Content of change: Add 5 auxiliary equipment (including hydrothermal reactor, oilless vacuum pump, hot air dryer, and plate centrifuge); reduce corresponding production equipment and auxiliary facilities
- Production technique: To produce L-tert-leucine by crude tert-leucine and other raw materials with process of reaction, extraction, distillation, crystallisation, centrifugation and drying (crude tert-leucine obtained by crude trimethylpyruvic acid reacting with other raw materials including ammonium formate)
- Product proposal: 100 t/a L-tert-leucine, 55 t/a manganese dioxide (by-product)
- Employees: Decrease from 30 in the original EIA report to 10





Established in May 2006, Huamao Fine Chemical has held two completed projects: 12 t/a coenzyme Q10 project and 20 t/a cyclopropyl naphthalene triazothione project.

### Zhuhai Readline's production base project publicised for EIA approval

From 23 March to 6 April, Zhuhai Ecological Environment Bureau of Guangdong Province made Zhuhai Readline Biological Co., Ltd. (Zhuhai Readline)'s production base project for EIA approval. This project conducted public participation for EIA in Dec., 2021.

Project overview:

- Nature: New construction
- Location: Jinwan District, Zhuhai City, Guangdong Province
- Floor area: 2,700 m<sup>2</sup>
- Total investment: USD10.55 million (RMB67 million); USD0.32 million (RMB2.06 million) for environmental protection
- New constructions:
  - a high volume production line (40 t/a β-nicotinamide mononucleotide, 80 t/a glutathione, and 50 t/a carnosine)
  - a 20 t/a oxidised glutathione production line
  - 2 pilot production lines (pilot tests of 0.5 t/a coenzyme A, 0.5 t/a N-acetylneuraminic acid, 0.5 t/a phosphoesterlyserine, 0.5 t/a alanyltyrosine, etc. )
- Staff: 136

Established in Feb. 2021, Zhuhai Readline is a wholly-owned subsidiary of Shenzhen Readline Biotechnology Co., Ltd. (Shenzhen Readline). Shenzhen Readline is specialised in business of enzyme catalysis, including the development, production and sale of polypeptides, polysaccharides, nucleic acids and other products, and owns a pilot-scale plant located in the bio-incubator of Nanshan District in Shenzhen City, Guangdong Province. The project concerning the establishment of a new production base in Zhuhai is to expand Shenzhen Readline's biomedical industries.

### Linghua Group's 5,000 t/a feed-grade amino acid chelated salt project obtains preliminary public notice of EIA

On 12 April, Liangshan County's Ecological Environment Bureau of Jining City released a preliminary public notice of EIA on Shandong Linghua Biotech Co., Ltd. (Linghua Group)'s 5,000 t/a feed-grade amino acid chelated salt project. On 2 April, the project was publicised for EIA approval.

Project overview:

- Nature: New construction
- Location: Plant area of Linghua Group, Jining City, Shandong Province
- Total investment: USD3.15 million (RMB20 million); USD0.31 million (RMB2 million) for environmental protection (10% of the total)
- Production technique: All products in this project are basically the same in production technique, with raw materials including amino acids and inorganic salts, processed through reacting, cooling, drying, sieving, crushing and packaging procedures.
- Construction period: 4 months
- Product scheme:
  - 2,000 t/a amino acid chelated salt
  - 2,000 t/a protein chelate salt





- 600 t/a glycine chelate salt
- 400 t/a methionine chelate salt
- Major raw materials:
  - 215 t/a glycine
  - 162 t/a methionine
  - 1,546 t/a amino acid raw powder
  - 1,280 t/a hydrolyzed protein powder
- Labor appointment: 24
- Working system:
  - four shifts with three changing in a working day
  - 300 working days in a year

In 2012, Linghua Group, moving from city to development zone, carried out the 20,000 t/a feed-grade lysine relocation project, which was completed and put into production in 2014 and then stopped in 2017. In addition, Linghua Group converted part of the plants and equipment into the 10,000 t/a 1,3-propylene glycol project, which was completed in Feb., 2021 and is in the commissioning stage now.

### **Nanjing All-plus's project of amino acid intermediates and derivatives publicised for EIA**

On 2 April, 2022, Nanjing Ecological Environment Bureau of Jiangsu province made Nanjing All-plus Chemical Co., Ltd. (Nanjing All-plus)'s development project of amino acid intermediates and derivatives publicised for EIA approval.

Project overview:

- Nature: New construction
- Location: Science and Technology Innovation Park of Qixia District, Nanjing City, Jiangsu Province
- Floor area: 603.6 m<sup>2</sup>
- Total investment: USD0.31 million (RMB2 million); USD47,200 (RMB300,000) for environmental protection, accounting for 15% of the total
- Product scheme:
  - 200.4kg/a amino acid intermediates, including levodopa (usually for the treatment of Parkinson's disease of the elderly) and glutathione(mainly for the treatment of liver diseases)
  - 279.9kg/a amino acid derivatives, including glycine ethyl ester (an intermediate for the synthesis of oxiracetam to make nootropic drugs), N-lauroylalanine antibacterial potentiator and N,N-dicarboxylic acid-3-cupric tartrate
- Construction period: 3 months; put into production in May, 2022
- Number of staff: 15
- Working system:
  - 8 hours in a working day
  - 250 working days in a year

Established in May 2021 with the registered capital of USD0.79 million (RMB5 million), Nanjing All-plus's main business is the technology development of bio-based materials and biochemical products. This project tends to develop drug intermediates and adjuvants, not involving the production of finished drugs, and all samples will be handled as hazardous waste after the whole study.



**TABLE 16:** Research and development capacity of amino acid intermediates and derivatives

No.	Product	R&D capability (kg/a)	
1	Amino acid intermediates	Levodopa	140.5
2		Glutathione	59.9
3		Glycine ethyl ester	101.9
4	Amino acid derivatives	N-lauroylalanine antibacterial potentiator	50.2
5		N,N-dicarboxylic acid-3-cupric tartrate	127.8

Source: Nanjing All-plus

**TABLE 17:** Consumption for major raw materials

No.	Raw material	Consumption (kg/a)
1	L-tyrosine	140.0
2	Glycine	106.0
3	L-alanine	15.0
4	L-ethyl glutamate	41.0
5	Glycine ethyl ester	30.5
6	L-cysteine	18.5

Source: Nanjing All-plus

### Aiyuan Biomedicine's and Hongri Pharmaceutical's R&D laboratory projects obtain preliminary public notice of EIA

On March 16, 2022, the preliminary public notices of EIA on the molecular biology and functional medicine research & development (R&D) laboratory project of Sichuan Aiyuan Biomedical Science and Technology Co., Ltd. (Aiyuan Biomedicine) and the innovative drug synthesis R&D laboratory project of Sichuan Hongri Pharmaceutical Technology Co., Ltd. (Hongri Pharmaceutical) were released.

Project overview of Aiyuan Biomedicine:

- Total investment: USD1.57 million (RMB10 million)
- Construction content: molecular biology and functional medicine R&D laboratory, engaged in lab-scale and pilot-scale experiments.
  - lab-scale experiment: deferasirox 6 times/a, arginine-glycine-aspartic acid tripeptide small molecules 100 times/a and collagen 100 times/a;
  - pilot-scale experiment: oroxine intermediates (the largest batch of N-acetyl-3,5-diiodo-L-tyrosine ethyl ester is about 25 times/a and 500 kg/a), tiratricol intermediates and collagen.





Established in Jan., 2021, Aiyuan Biomedicine's main business includes medical research experiments, and biochemical product technology R&D, with the registered capital of USD0.31 million (RMB2 million).

Project overview of Hongri Pharmaceutical:

- Total investment: USD1.65 million (RMB10.5 million)
- Construction content: innovative drug synthesis R&D laboratory, engaged in the small and pilot test R&D of amino acid derivatives and small-molecule drugs.
  - small test: 80 times/a intermediates for alkoxycarbonylation reaction of amino, 148 times/a intermediates for esterification reaction of amino acid, 150 times/a intermediates for N-alkylation reaction of amino acid and 80 times/a intermediates for N-carboxyanhydride reaction of amino acid;
  - pilot test: 15 times/a D-fluorenylmethyl tyrosine ethyl ether.

Established in March, 2021, Hongri Medicine's main business includes the biochemical products technical R&D and chemical products sales, with the registered capital of USD0.94 million (RMB6 million).

### **Shandong Shenganbei's Nanjing Branch R&D center construction project obtains preliminary public notice of EIA**

In 22 March, 2022, the preliminary public notice of EIA on Nanjing Branch research & development (R&D) center construction project of Shandong Shenganbei New Energy Co., Ltd. (Shandong Shenganbei) was released.

Project overview:

- Total investment: USD3.7 million (RMB23.3 million); USD31,491.6 (RMB200,000) for environmental protection
- Location: Jiangbei New Area, Nanjing City, Jiangsu Province
- Construction content: To build laboratories, chemical warehouses, waste warehouses, offices, environmental protection engineering and public engineering engaged in laboratory R&D and the small test, not involving production and pilot-scale experiments. R&D products are not used for sales.
- R&D contents: mainly for Fmoc-glycine, Fmoc-L-valine, Fmoc-L-leucine, Fmoc-AEEA-OH, 2-(4-bromophenyl)-1,3-benzoxazole, 2'-Bromo-10-phenyl-10H-spiro[acridine-9,9'-fluorene], 2-(3-pinacol ester phenyl)-4,6-diphenyl-1,3,5-triazine, and N-[4-(4-bromophenyl)phenyl]-4-phenyl-N-(4-phenylphenyl)aniline.

Established in June 2016 and with a registered capital of USD26.8 million (RMB170 million), Shandong Shenganbei's legal representative is Cao Guibao, and its main business includes the development of new technologies, new materials and new energy projects, and the R&D of bio-chemical products.

### **Haisco's arginine glutamate injection passes the generic drug consistency evaluation**

On 2 April, 2022, Haisco Pharmaceutical Group Co., Ltd. (Haisco) issued a notice that its wholly-owned subsidiary Liaoning Haisco Pharmaceutical Co., Ltd. had its arginine glutamate injection passed the generic drug consistency evaluation.

Arginine glutamate injection was first developed by AY Pharmaceuticals (formerly known as Morishita Pharmaceutical Company) and went on the market in Japan in Nov. 1960. Haisco's arginine glutamate injection was approved for sale in May 2015, which was unique in China. It sold no imported preparations and its imitation products bore the same specifications and dosage forms with those of Japan.





Description for arginine glutamate injection:

- Formulation: injection
- Specification: 200ml/20g
- Adaptability: adjuvant treatment of blood ammonia increase caused by chronic liver disease

Established in Aug. 2005 with the registered capital of USD0.17 million (RMB1.08 million), Haisco's main business includes the sales of chemical raw materials and pharmaceutical excipients, and the research, development, technical services and technology transfer of Chinese and western medicines and new products.

### Longjiang Fufeng's and Fuyu Yihai-Kerry's projects start construction in April

On 7 April, 2022, Qiqihar Longjiang Fufeng Biotechnology Co., Ltd. (Longjiang Fufeng) started the construction of its threonine workshop, for the 50,000 tonne 70-threonine and the production supporting facilities project. Upon completing the first stage of the project, it is expected that Longjiang Fufeng's production of its 70-threonine will reach 25,000 t/a. Longjiang Fufeng planned to complete annual investment of USD16 million (RMB104 million), with the total investment USD84 million (RMB535 million), and the project passed investment recording on 8 Dec., 2021.

On 7 April, 2022, Longjiang Fufeng's project of intelligent technology upgrading and clean production engineering of energy saving and emission reduction started construction to undertake the upgrading of the ammonium sulfate extraction, starch plant automation, amino acid fermentation and clean production of sugar crystals, with the total investment of USD196 million (RMB1.245 billion). The project passed investment recording on 2 June, 2020, and is expected to be completed in Dec. 2022.

On 7 April, 2022, Fuyu Yihai-Kerry Biotechnology Co., Ltd. (Fuyu Yihai-Kerry)'s 210,000 t/a sodium glutamate project started construction.

Project overview:

- Nature: Technical innovation and expansion
- Location: Fuyu economic development zone, Qiqihar City, Heilongjiang Province
- Floor area: 266,510 m<sup>2</sup>; 126,763 m<sup>2</sup> for built-up area
- Total investment: USD220 million (RMB1.40 billion); USD2.99 million (RMB 19 million) for environmental protection
- Construction content: saccharification workshop, fermentation workshop, extraction workshop, refining workshop, bacterial protein workshop, compound fertilizer workshop, etc.
- Production capacity scheme:
  - cornstarch: 300,000 t/a
  - sodium glutamate: 210,000 t/a
  - bacterial protein: 26,500 t/a
  - compound fertilizer: 189,100 t/a
  - sugar residue: 1,0800 t/a
- Labor appointment: 480
- Working system:
  - Three 8-hour shifts in a working day





- 340 working days in a year

Established in April 2018 with the registered capital of USD303 million (RMB1.925 billion), Fuyu Yihai-Kerry's main business is the manufacture of food-grade glutamic acid, monosodium glutamate, condiment, feed and food additives, starch and starch products (starch sugar, corn starch and wheat starch) and protein additives.

### **Inner Mongolia Yuwang's and Daoyi Biotechnology's amino acid projects reported for the record**

On 7 April, 2022, Inner Mongolia Yuwang Biotechnology Co., Ltd. (Inner Mongolia Yuwang)'s 120,000 t/a lysine project was reported for the record.

Project overview:

- Nature: New construction
- Location: Kailu County's Corn Industrial Park, Tongliao City, Inner Mongolia Autonomous Region
- Total investment: USD142 million (RMB900 million)
- Construction content: to build a new lysine production line, sugar workshop, fermentation workshop, extraction workshop and product coating workshop, and raw material warehouse, finished product warehouse, office buildings and other facilities
- Production capacity: 120,000 t/a lysine
- Construction period: May 2022–Dec. 2023

Established in Dec. 2005 with a registered capital of USD31.49 million (RMB200 million), Inner Mongolia Yuwang's main business includes the manufacture and sale of corn starch and its deep processing products, corn oil, single feed ( corn gluten meal and spray corn husk ), corn germ cake, modified starch, starch sugar and sodium gluconate.

On 7 April, 2022, Shanxi Daoyi Biotechnology Co., Ltd. (Daoyi Biotechnology)'s 2,000 t/a l-proline and 200 t/a l-hydroxyproline project was reported for the record.

Project overview:

- Nature: Expansion
- Location: Yanhu Industrial Park, Yuncheng City, Shanxi Province
- Total investment: USD3.15 million (RMB20 million)
- Construction content:
  - a l-proline production line with newly-purchased 100 production equipment (sets), processed through strain fermentation, filtration, ultrafiltration, ion exchange, concentration, decolorisation, crystallisation, centrifugation, drying, screening, packaging procedures;
  - a l-hydroxyproline production line processed through strain fermentation, filtration, ultrafiltration, concentration, decolorisation, crystallisation, centrifugation, drying, screening, packaging procedures.
- Production capacity: 2,000 t/a l-proline project and 200 t/a l-hydroxyproline
- Commencement date: April 2022

Established in Dec. 2018 with a registered capital of USD787,290 (RMB5 million), Daoyi Biotechnology's main business includes the







research and development, production and sale of chemical products, and fertilisers including compound fertiliser, organic fertiliser and microbial fertiliser, and health-care food manufacturing and food business.



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