

 **Chapters (Price update, market dynamics) of  
Sweetener Newsletter 202112**

VOL.12 Issue 12, December, 31, 2021



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## Market Dynamics

### CSPC Innovation to purchase 100% equity of CSPC Shengxue

Summary: On 20 Nov., 2021, CSPC Innovation released acquisition plan for 100% equity of CSPC Shengxue funded through issuing shares.

On 20 Nov. 2021, CSPC Innovation Pharmaceutical Co., Ltd. (CSPC Innovation) released a statement proposing to purchase 100% equity of CSPC Shengxue Glucose Co., Ltd. (CSPC Shengxue, controlled by its major shareholder — CSPC NBP Pharmaceutical Co., Ltd. (NBP Pharmaceutical)) through issuing its shares. CSPC Innovation and CSPC Shengxue are sister companies both under CSPC Pharmaceutical Group Co., Ltd. (CSPC).

Based on the asset appraisal report, CSPC Shengxue was valued at USD130.31 million (RMB830 million) as of benchmark date on 31 May, 2021; while, according to CSPC Innovation's proposal, an aggregate of USD125.60 million (RMB800 million) will be offered for 100% equity of CSPC Shengxue over the two-way agreement.

CSPC Innovation's objectives of the transaction

- Business expansion: CSPC Innovation has been dedicated to health care industry and intended to expand its operation to the upstream field and strengthened its place in the lower reaches. So the company takes this transaction as its chance to engage in the business of functional raw materials that are applicable to ease nutrition imbalance and dysglycemia.
- Portfolio diversification: CSPC Innovation also aims to create a platform that applies modern bio-technologies to the industrialisation of functional raw materials with support of CSPC Shengxue's developed bio-technologies including fermentation technology and enzymatic technology, and push out new functional raw material products that meet the market needs when blending with its current businesses.
- Strong profitability: CPSC Shengxue produces stable batches of quality anhydrous glucose and acarbose via high-standard production and processing techniques; plus, under the further development of health care industry, demand for premium anhydrous glucose and acarbose has been growing. These two factors make CPSC Shengxue high in profits and competitive in the market, and hence a strong booster for CSPC Innovation's overall performance upon the completion of the acquisition.

CPSC Shengxue was established in 1992, taken over and restructured by CSPC in Jan. 2012 and later renamed from Hebei Shengxue Glucose Co., Ltd. in Nov. 2013. It focuses on the production and sale of anhydrous glucose and acarbose — currently, in China, 85% of pharmaceutical-grade anhydrous glucose products in the pharmaceutical-grade anhydrous glucose injection market are manufactured by Xiwang Group Co., Ltd while acarbose products are highly relied on overseas supply — and produces 30,000 t/a of anhydrous glucose for injection use and 30 t/a of acarbose. Financial reports show that CPSC Shengxue's annual revenue exceeds USD47.10 million (RMB300 million) on average. Over the period of May-Jan., 2021, the company's net profit has reached USD4.85 million (RMB30.90 million), approaching the total of USD5.06 million (RMB32.22 million) in 2020.

**TABLE 1:** Financial indicators of CSPC Shengxue, 2019–31 May 2021, USD million

Item	31 May., 2021	31 Dec., 2020	31 Dec., 2019
Total asset	63.59	56.59	46.65
Net asset	45.85	13.40	7.32
Item	Jan–May 2021	2020	2019
Revenue	26.96	49.19	31.89
Operating cost	17.74	35.63	24.15
Net profit	4.85	5.08	1.01

Source: Annual financial reports (audited) of CSPC Shengxue Glucose Co., Ltd.

Under the circumstances that acarbose, usually used to treat diabetes which is gaining young population, has seen price standing high and been mostly produced outside China, CPSC Shengxue, running a 30 t/a acarbose production line by now, plans to step up its production capacity through establishing production improvement and green factory upgrading projects to cater for the increasing market demand and flip this foreign-led scene.

Two acarbose projects have been underway and are projected to fuel up CPSC Shengxue's overall capacity to 260 t/a, accounting for 40% of the national capacity.

In Sept. 2020, CPSC Shengxue submitted the acarbose production improvement project to local government for examination and approval. Yet, it has not entered the construction stage.

Overview of the acarbose production improvement project

- Construction nature: Reconstruction
- Total investment: USD4.66 million (RMB29.65 million)
- Construction content: Based on the existing plant, new equipment and sewage treatment station will be introduced in the designated workshop; warehouse system and power system will be upgraded.
- Scheduled production capacity: 20 t/a of acarbose
- Labour quota and working system: 25 new labours working in two shifts (12 hours for each) totalling 8,400 hours for 350 days per year
- Construction period: 6 months

In April 2021, CPSC Shengxue submitted the green factory upgrading project to local government examination and approval. Yet, it has not entered the construction stage.

Overview of the green factory upgrading project

- Construction nature: Reconstruction
- Total investment: USD47.10 million (RMB300 million)
- Construction content: Based on the existing plant, old workshops will be demolished and expanded; one new workshop and one production will be constructed.
- Scheduled production capacity: 210 t/a of acarbose
- Working system: 78 new labours working in two shifts (12 hours for each) totalling 8,400 hours for 350 days per year
- Construction period: 18 months ending in end-Nov., 2022

CPSC Innovation mainly engages in the R&D, production and sale of functional foods, most of its which are caffeine-containing food additives that are widely used in functional drinks, and healthcare supplements. The company targets international markets like the US, Germany, Ireland, Brazil, India, and has been a global supplier of Pepsi, Coca-Cola, Red Bull. To date, it remains the largest production base of chemosynthetic caffeine in the world with annual output of 12,000 tonnes of caffeine, accounting for around 50% of the global sum. In the healthcare sector, it owns a representative of "CPSC GuoWeiKang Vitamin C Buccal Tablets".

### **EIA reports of erythritol projects of Starlight So True and Hebei Yuxing published**

Summary: The second round of information announcement on the EIA report of Starlight So True's project of 50,000 t/a functional sugars (alcohol) was made on 25 Nov., 2021. Meanwhile, EIA report of Hebei Yuxing's project of 160,000 t/a erythritol was publicised on 29 Nov.

On 25 Nov., 2021, the second round of information announcement on the EIA report of Shandong Starlight So True Biological Technology Co., Ltd. (Starlight So True)'s project of 50,000 t/a functional sugars (alcohol) was made. On 9 Aug., the EIA report was first publicised. Early on, the company published a new and old kinetic energy conversion project that included upgrading the production line for 20,000 t/a oligosaccharides and functional food ingredients. The conversion project was originally scheduled to be complete by the end of 2018. However, it only completed the civil work as there were changes in sales strategy. Now the functional sugars (alcohol) project will be constructed in the factories of the conversion project, and a new production line for galacto oligosaccharide (GOS), isomalto-oligosaccharide (IMO), and erythritol will be built.

**Overview of Starlight So True's 50,000 t/a functional sugars (alcohol) project**

- Construction nature: New construction
- Location: Leling City Economic and Technological Development Zone, Leling City (county-level), Dezhou City, Shandong Province
- Floor area: 60,340m<sup>2</sup> (90.51 mu)

- Total investment: USD47.86 million (RMB304.86 million)
- Major raw materials: Liquid glucose and maltose syrup from Shandong Zhonggu Starch Sugar Co., Ltd. (Shandong Zhonggu) will be transported to the factories through closed pipes
- Production capacity and production progress:
  - 10,000 t/a (50 d/a) galacto oligosaccharide (GOS)
  - 10,000 t/a (50 d/a) isomalto-oligosaccharide (IMO)
  - 30,000 t/a (250 d/a) erythritol
- Labour quota: 120 people in total (85 production workers, 5 technicians, 15 administrators, 15 sales people)
- Working system: three shifts in 350 working days, 8 hours per shift

Established in Oct., 2016, with a registered capital of USD18.84 million (RMB120 million), Starlight So True is a subsidiary of Shandong Starlight Sugar Industry Co., Ltd. (Shandong Starlight), producing and selling products including fructo-oligosaccharide (FOS), galacto oligosaccharide (GOS), isomalto-oligosaccharide (IMO), polydextrose, erythritol, psicose, lactitol, isomaltulose, etc. As for its parent company, Shandong Starlight was founded in 2004 with a registered capital of USD23.55 million (RMB150 million). It produces 1 million t/a sugar annually and it is the supplier of well-known enterprises such as Mengniu Dairy, Coca-cola, Nestlé, Want Want Group, Dali Foods, Yili, Wahaha, etc.

EIA report of Hebei Yuxing Bio-Engineering Co., Ltd. (Hebei Yuxing)'s 160,000 t/a erythritol project was publicised on 29 Nov., 2021. The project are divided into three phases.

#### Overview of Hebei Yuxing's 160,000 t/a erythritol project

- Construction nature: Expansion
- Location: Ningpu Economic Development Zone, Xingtai City, Hebei Province
- Floor area: 50,000m<sup>2</sup>
- Total investment: USD125.60 million (RMB800 million)
  - Investment for environment protection purposes: USD1.13 million (RMB7.21 million)
- Construction contents: Fermentation workshops (including ingredients), extraction workshops, finished warehouses, and other workshops and supporting facilities, etc. will be constructed in Phase I, Phase II, Phase III respectively
- Production capacity: 160,000 t/a erythritol
- Raw materials:
  - 34% glucose will be transported through pipes from liquid sugar workshops by Yufeng Industry Group Co., Ltd. (Yufeng Industrial Group)
  - Corn syrup processed by Yufeng Industrial Group's 2.10 million t/a corn deep-processing project will be transported through pipes and stored in raw material tanks.
- Labour quota and working system: 240 new labours working in three shifts (8 hours for each) for 350 working days

**TABLE 1:** Phase I, Phase II, Phase III of the 160,000 t/a erythritol project

Item	Phase I	Phase II	Phase III
Production capacity of erythritol, t/a	40,000	40,000	80,000
Investment, million USD	31.4	31.4	62.8
Investment for environmental protection purposes, thousand USD	342.27	342.27	447.46
Floor area, m2	11,000	14,000	25,000
Building area, m2	22,500	21,500	44,000
Construction period, month	12	14	15
Additional labour quota	60	60	120

Source: EIA report of Hebei Yuxing's project of 160,000 t/a erythritol

Hebei Yuxing, a subsidiary of Yufeng Industrial Group, was established in 2003 with a registered capital of USD28.89 million (RMB183.99 million). It mainly engages in the R&D, production and sales of products concerning vitamin B12. The main products of the company are vitamin B12, mecobalamin, hydroxocobalamin, cobamamide, vitamin B12 feed additives, food additives, etc.

### **Updates on Huahe Bai Biotech's 600 t/a stevioside project and Jiangxi PureCircle's 40 t/a high-RB stevioside project**

Summary: In early Nov., the EIA statement of the new functional separating materials and plant extracts project of Huahe Bai Biotech was approved and publicised online—project includes construction of 600 t/a of stevioside; Earlier in Oct., EIA report of Jiangxi PureCircle's 40 t/a high-Rebaudioside B (RB) stevioside technology transformation project was accepted—project construction is projected to complete in two months.

#### **Shaanxi Huahe Bai Biotechnology Co., Ltd. (Huahe Bai Biotech)**

In early Nov., 2021, Ankang Municipal Ecology and Environment Bureau approved and publicised the environmental impact assessment (EIA) statement of the new functional separating materials and plant extracts project of Huahe Bai Biotech on its official website. This EIA statement was accepted and disclosed by the authority in mid-Sept.

Overview of the new functional separating materials and plant extracts project

- Construction nature: New construction
- Location: Xunyang High-tech Industrial Development Zone, Ankang City, Shaanxi Province
- Floor area: 80,000 m<sup>2</sup>
- Total investment: USD31.40 million (RMB200 million), of which USD2.34 million (RMB14.89 million) are environmental investment
- Construction content:
  - A production line of 38,000 t/a functional separating materials (functional absorbent resin, decolourisation resin, desalination resin, and by product (magnesium sulphate))
  - A production line of 1,800 t/a plant extracts (tea polyphenol and stevioside)
- Scheduled capacity: 39,800 t/a in total
- Working system:
  - Managerial and technical staff in day shift
  - Production workshop operators in three shifts
  - Warehouse operators in two shifts
  - Other workshop operators in day shift
- No. of employees: 200 in total working for 330 days per year
  - Managerial and technical staff: 50
  - Production staff and auxiliaries: 150

**TABLE 1: Projected products and capacity**

Project	Capacity, t/a
Functional absorbent resin I	3,000
Functional absorbent resin II	3,000
Decolorisation resin I	8,000
Decolorisation resin II	2,000
Desalination resin	6,000
Magnesium sulphate	16,000
Tea polyphenol	800
Stevioside	600
Polygonum cuspidatum	400
<b>Total</b>	<b>39,800</b>

Source: Huahe Bai Biotech

**TABLE 2: Consumption of raw materials of stevioside**

Raw material	Consumption per unit (kg/t)	Consumption, t/a
Stevia dry leaves	10,000	6,000
Citric acid	350	210
Others	704	622

Source: Huahe Bai Biotech

Founded in Nov. 2018 with a registered capital of USD3.14 million (RMB20 million), Huahe Bai Biotech is dedicated to the R&D, production and sale of functional separating materials and plant extracts.

#### **PureCircle (Jiangxi) Co., Ltd. (Jiangxi PureCircle)**

On the other side, earlier in Oct., the EIA report of Jiangxi PureCircle's 40 t/a high-Rebaudioside B (RB) stevioside technology transformation project was accepted and released by the Ganxian District Ecology and Environment Bureau of Ganzhou City, Jiangxi Province. According the company, a new pilot production line of stevioside product with low concentration will be introduced into its operational stevioside production which will stay at the same operation level of 3,000 t/a after this project construction completes. The currently operation includes products in specifications of SG90, SG95, SGM15, SGM25, SGD20, SGB80.

#### Overview of the 40 t/a high-Rebaudioside B (RB) stevioside technology transformation project

- Construction nature: Technology transformation
- Location: Ganxian District, Ganzhou City, Jiangxi Province
- Total investment: USD2.73 million (RMB17.36 million), of which USD282.61 thousands (RMB1.8 million) are environmental investment
- Construction content: introduce new purification equipment for product with low concentration in the idle rooms of the purification workshop with the existing production line and capacity unchanged
- Scheduled capacity: 40t/a of high-Rebaudioside B (RB) stevioside
- Production process: The target product is procured from the RB that is isolated from the acidified recovery solution and then underwent steps such as centrifugal separation, dissolution in ammonia

solutions, concentration with nanofiltration (NF) membrane and spray drying.

- Construction period: Two months

Jiangxi PureCircle, established in 2002 with a registered capital of USD34 million, is a Sino-foreign joint venture focusing on the production and sale of stevioside. Its foreign investor refers to the Malaysia-based stevia producer, PureCircle Sdn Bhd.

### **CCGB to increase capitals in three subsidiaries**

Summary: On 26 Dec., CCGB proposed to step up its investments in three subsidiaries worthy of USD43.80 million (RMB279 million).

On 26 Dec., 2021, Chenguang Biotech Group Co., Ltd. (CCGB) announced an investment proposal adding USD43.80 million (RMB279 million) of owned funds to three subsidiaries' registered capitals. Detailed items are as followed:

- USD23.55 million (RMB150 million) to wholly-own subsidiary, Chenguang Biotechnology Group Handan Co., Ltd. (Chenguang Handan) whose registered capital will be up to USD31.40 million (RMB200 million) after the transaction completes;
- USD12.72 million (RMB81 million) to wholly-own subsidiary, Hebei Chenguang Pharmaceutical Co., Ltd. (Chenguang Pharm) whose registered capital will be up to USD15.70million (RMB100 million) after the transaction completes;
- USD196,254 (RMB1.25 million) for 10% equity shares of Hebei Chengguang Tianrun Pharmaceutical Co., Ltd. (Tianrun Pharm) through Chenguang Pharm, in company with USD7.54 million (RMB48 million) from Chenguang Pharm who, after the whole transaction settles, will hold 95% shares of Tianrun Pharm.

#### **Basic info of three subsidiaries:**

- Chenguang Handan was established in 2013 and has an operational production line of plant extracts (5,200 t/a) including lutein micro-capsule (200 t/a) and tea polyphenol (500 t/a).
- Chenguang Pharm was founded on 10 Sept., 2018, and mainly businesses in CCGB's Traditional Chinese medicine (TCM). The company is in the start-up period.
- Tianrun Pharm was incorporated in 2019 with a registered capacity of USD6.28 million (RMB40 million), and mainly participates in the production and sale of active pharmaceutical ingredients (APIs), medical intermediates, chemical compounds.

For the time being, CCBG runs one automatic production line producing 1,500 t/a of stevioside. In H1-H3, 2021, sales revenue from stevioside product jumped by 167% YoY. CCBG concluded two factors contributing to the growth:

- Improved supply-demand relation: Over the past few years, market supply of stevioside outnumbered demand posing a great threat on manufacturers' operations and cooling down farmers' enthusiasm to grow the raw materials. But 2021 market has moved on to a supply-demand balance with product price heading upward.
- Production upgrade: The company has improved its stevia production process enabling synchronous extraction of stevia and by-product (caffeoylquinic acid (CQA)). This improvement made it more competitive in the market with its diversified product portfolio.

Looking into the industrial development, Guilin Layn Natural Ingredients Corp. (Layn) commented on an investor relation activity on 23 Dec., saying that prices of stevia rebaudiana and siraitia grosvenorii will continue to rise in a steady pace for long period of time which is a positive sign for the industry development. Reasons were given as follows:

- Farmers will show mild interests in growing agricultural products to the low market price as a whole.
- But raw material prices will go up in consequence of the supply shortfall.

Layn is a plant extracts corporate that adopts "company+production base+farmer household" cooperative model at the raw material end as well as has invested in large farming cooperatives in a bid to cut material costs and control cost variation.

PS: The "company+production base+farmer household" cooperative model is a vertical integration strategy in which a business rents lands from farmers to develop its planting base and employs the local farmers for land management.

Additionally, Layn believes natural sweetener is the future of sugar substitute:

- Downstream side: The growing trend of sugar substitute is irreversible amid the wide spread of "nature" concept across the world. Natural sweetener is the best category adopting to this environment.



- Upstream side: Increasing number of large food & beverage producers taps into the application of natural sweeteners especially from the downstream purchasing habits.
- Underlying value: Natural sweetener outperforms others of its kind in sweetness or practice cost—the cost per unit of stevia is only one-fourth of that of sucrose. Except from artificial sweeteners, stevia is the most cost-effective sweeteners as far and its raw materials can be sourced from a wide range of foods.

Firmenich Aromatics (China) Co., Ltd. is a major partner of Layn in natural sweetener business. The two companies have reached a long-term cooperative agreement on exchange of product application and production technologies, joint customer development and accesses to each party's plants.

Layn tends to purchase stevia rebaudiana raw materials in Q4 and then prices its products for the next time period based on its purchasing price of raw materials and forecasts on market competition, customs fees and charges, etc. Change will be made in the middle of year if its price is far apart from the market number.

### **Approval publications of Hengshui Lide's stevia project and Shandong Jintai's glucose project**

Summary: In Dec, the check and approval results of Hengshui Lide's 100 t/a stevia project and Shandong Jintai's 200,000 t/a glucose project were published along with the initial EIA of Jinjiang Jiashun 30,000 t/a starch syrup project.

#### **Hengshui Lide Green Biotechnology Co., Ltd. (Hengshui Lide)**

On 20 Dec., 2021, Hengshui Lide's 100 t/a high-purity stevia project construction passed the authority's checking.

##### Project overview

- Construction nature: New construction
- Location: Jizhou District, Henshui City, Hebei Province
- Floor area: 21,333 m<sup>2</sup>
- Total investment: USD1.26 million (RMB8 million), of which USD136,593 (RMB870,000) are environmental investment
- Construction content: establish production equipment—the actual constructions include 82 sets of equipment from the previously proposed amount of 135 sets
- Capacity:
- Consumption of raw material: 510 t/a of stevia dry leaf

Hengshui Lide was founded in 2012 with a registered capital of USD785,016 (RMB5 million) and mainly engages in the processing and sale of high-purity stevia. The unaccomplished work in this project will not continue according to the company.

#### **Shandong Jintai New Material Co., Ltd. (Shandong Jintai)**

On 9 Dec., 2021, approval of Shandong Jintai's 200,000 t/a glucose project was launched.

##### Project overview

- Construction nature: New construction
- Location: Zouping (county-level) City, Binzhou City, Shandong Province
- Floor area: 2,376 m<sup>2</sup>
- Total investment: USD722,214 (RMB4.6 million), of which USD7,850 (RMB50,000) are environmental investment
- Construction content:
  - Rent and utilise the existent production workshops and the supporting facilities
  - Introduce new related equipment
- Product scheme: purchase glucose TK, malt syrup, high fructose corn syrup (HFCS) to produce 200,000 tonnes of glucose annually
- Working system: 15 employees in one shift (8 hour each day) working for 300 days per year

Shandong Jintai was set up in 2018 with a registered capital of USD4.71 million (RMB30 million) and dedicates to the production and sale of liquid glucose (or glucose syrup), sodium acetate and new-type carbon sources.

#### **Jinjiang Jiashun Food Co., Ltd. (Jinjiang Jiashun)**

On 27 Dec., 2021, the environmental impact assessment (EIA) of Jinjiang Jiashun's 30,000 t/a starch syrup project was released for the first time. The project is invested with a total of USD12 million (RMB77 million) for 30,000 t/a production capacity of malt syrup.

Jinjiang Jiashun was registered in 2014 with a capital of USD4.40 million (RMB28 million). Its business covers the production and sale of starch, and manufacturing of starch sugar and other starch-based products.

## Price Update

### Ex-works prices of sweeteners in China, Dec. 2021

**TABLE 1:** Ex-works prices of sweeteners in China, Dec. 2021

No.	Product	Price in Dec. 2021, USD/t	Price in Nov. 2021, USD/t	Sweetness compared with sucrose	Price of unit sweetness in Dec. 2021, USD/t	MoM change of price in Dec. 2021
1	Saccharin	8,164.16	8,412.26	300	27.21	-2.95%
2	Steviol glycosides (RA95)	83,211.66	77,891.33	450	184.91	6.83%
3	Sucralose	72,221.43	70,414.00	600	68.03	-4.71%
4	Acesulfame-K	7,065.14	7,477.57	200	35.33	-5.52%
5	Aspartame	16,485.33	15,889.83	200	82.43	3.75%
6	Cyclamate (NF13)	2,355.05	2,570.41	30	78.50	-8.38%
7	Glycyrrhizin (tripotassium glycyrrhizinate)	14,601.29	14,799.35	150	97.34	-1.34%
8	Neotame (98%)	51,811.03	56,081.75	8,000	6.48	-7.62%
9	Sugar	894.92	894.35	1	894.92	0.06%
10	Erythritol	2,826.06	2,959.87	0.65	4,347.78	-4.52%
11	Mannitol (food grade)	3,611.07	3,894.57	0.7	5,158.67	-7.28%
12	FOS (fructo oligosaccharide, 95%, powder)	5,495.11	5,608.18	0.3	18,317.03	-2.02%
13	XOS (xylo oligosaccharide, 95%, powder)	30,929.62	31,623.88	0.4	77,324.04	-2.20%
14	Crystalline maltitol	2,512.05	2,648.31	0.35	7,177.29	-5.14%
15	Crystalline sorbitol	1,318.83	1,355.31	0.5	2,637.65	-2.69%
16	Maltose syrup (75%, liquid)	502.41	529.66	0.9	558.23	-5.14%
17	Sorbitol (70%, liquid)	616.24	654.29	0.7	880.34	-5.82%
18	HFCS (fructose: 55%, liquid)	533.81	568.61	1	533.81	-6.12%
19	HFCS (fructose: 42%, liquid)	506.34	537.45	1.1	460.30	-5.79%
20	Maltitol (75%, liquid )	706.51	732.18	0.9	785.02	-3.51%
21	Glucose monohydrate	659.41	701.02	0.74	891.10	-5.94%
22	Crystalline xylitol	4,082.08	4,050.35	1.2	3,401.73	0.78%

Source: CCM

## Erythritol and HFCS prices edging down while TGS on the rise

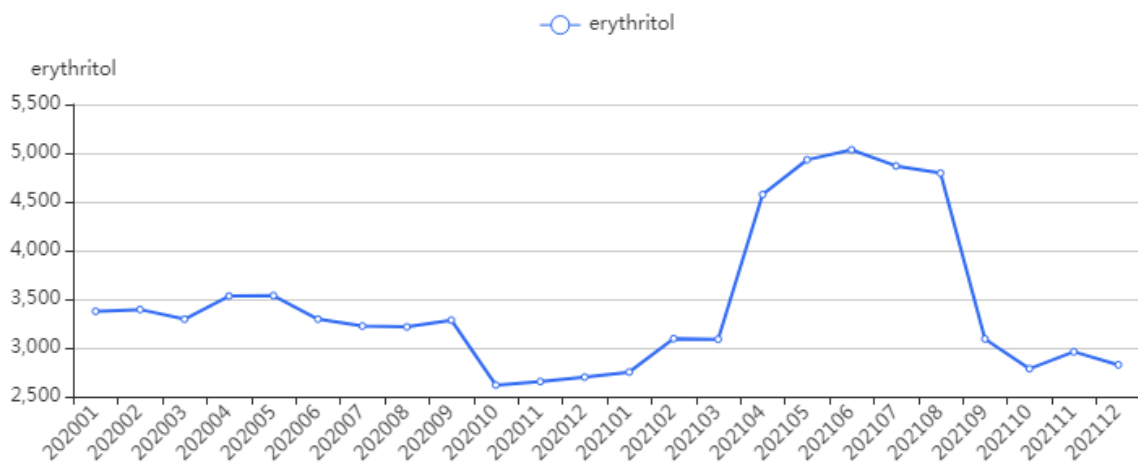
Summary: In Dec., ex-works price of erythritol fell by 4.52% MoM to USD2,826/t and the averages of HFCS (F42 and F55) went down by around 6 % MoM; TGS figure picked up by 2.57% MoM arriving at 72,221/t.

### Erythritol

In the last month of 2021, the ex-works price of erythritol was USD2,826/t, down slightly by 4.52% MoM but still up by 4.67% YoY. In April–Aug. of 2021 which is the peak selling season, erythritol price had been standing high due to tightened supply amid the increased demand.

Since the start of Sept. when industrial manufacturers such as Baolingbao Biology Co., Ltd. (BLB) with its erythritol production expansion project were launching more capacity to the market plus the season shift, demand has rolled down along with price back to the regular level. These effects carried over the following months, driving down the overall price—the monthly prices of erythritol from Oct. to Dec., were below USD3,000/t.

**FIGURE 1:** Ex-works price of erythritol in China, Jan 2020–Dec 2021



Source: CCM

### High-fructose corn syrup (HFCS)

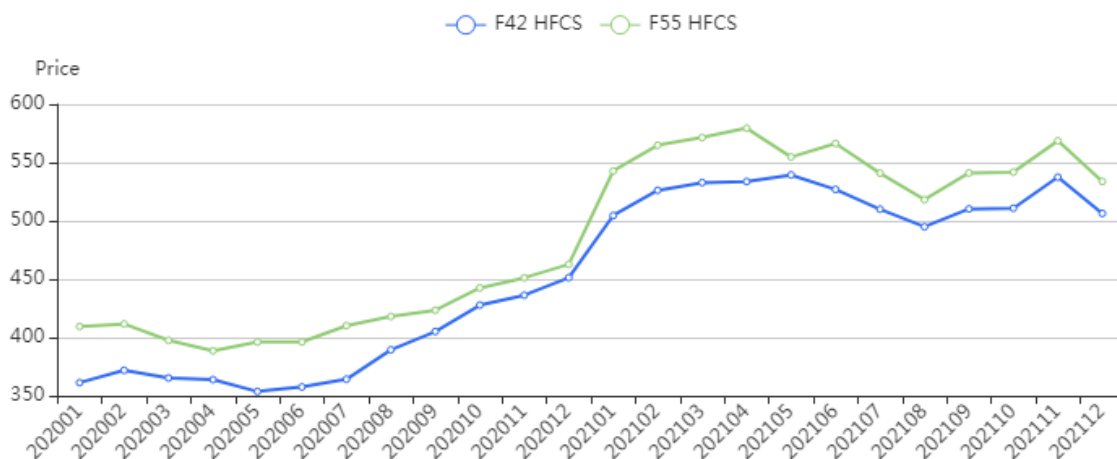
In Dec., F42 HFCS segment recorded ex-works price dipped by 5.79% to USD506 /t while F55 HFCS saw price down by 6.12% to USD534 /t.

The 2021 average price of HFCS is above that of 2020 mainly pushed up by the high-cost in the raw material, corn; look over this H2, the prices of the two products were comparably on the "rise-fall" advance—continuously growing in Aug.–Nov., and then falling by 5.79% (F42 HFCS) and 6.12% (F55 HFCS) respectively.

Factors accounting for the downward trend in Dec.

- Supply/demand cycle: Autumn is a typical weak season when market demand for HFCS maintains low.
- Cost of raw materials (corn & corn starch): Since the beginning of Dec., market price of corn has gone down as the north region gaining good harvests: On the other hand, corn starch manufacturers stepped up their productions, spurred by the high economic benefits in the business. That gave the HFCS enterprises edges to negotiate for deals at a lower price. Here, the result of cost reduction from corn and corn starch, has weakened the growth momentum of HFCS from previous months and hence, drew down the overall price in Dec.

**FIGURE 2:** Ex-works price of F42 HFCS and F55 HFCS in China, Jan 2020–Dec 2021



Source: CCM

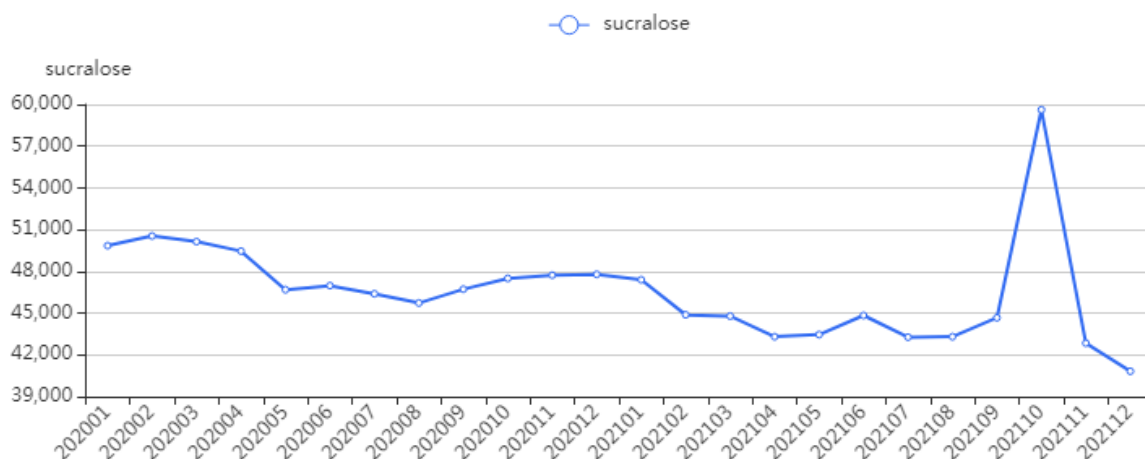
**TGS (also known as sucralose)**

The ex-works price of TGS rose by 2.57% and 51.14% YoY, settled at USD72,221/t this month. Particularly, TGS price shot up in Oct. and upside movement continued—USD44,664/t in Sept jumping up USD70,414/t in Nov., an increase of USD25,750/t. Entering Dec., the growth has slowed down with an increase of USD1,807/t.

Growth drivers are detailed as follows:

- Supply side: Resulting from the upgraded inspections on food safety and eco-friendliness in winter specially during the period of the Winter Olympics, risks in producing TGS, identified as the "Two-High" product (high in energy consumption and emission) shored up amid short supply in the market. Meanwhile as approaching the opening of the Olympics Games, a part of TGS manufacturers in Hebei and Shandong provinces were considering to suspend or reduce their production operations; while some companies suggested that they were planning an one-month annual overhauling before or after Chinese Spring Festival. TGS market will hold on a tense supply-demand until the end of Jan. next year.
- Demand side: Order negotiation set off this month adding with the holiday orders, promising a price rise in this regard.

**FIGURE 3:** Ex-works price of sucralose in China, Jan 2020–Dec 2021



Source: CCM

In a short run, the mass hoarding during the holiday season will lift up the market demand for erythritol, TGS and HFCS so as their prices, but not much—the beverage industry has missed the expectation this year. Therefore, prices of the three sweeteners are projected to increase though by a small margin.

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**Publisher: Kcomber Inc.**

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