



Supplier Scouting for Natural Extract Manufacturers

Case Study

| | |
|-----------------|----------------------------------|
| Client | A food & beverage company |
| Industry | Food & beverage |
| Products | Nutritional food and supplements |

Engagement Scope

1
Supplier Landscape

- Who are the major producers and manufacturers of food grade natural extracts?
- What is the technology employed by suppliers for extracting the desired ingredient?
- What are the basic details of identified players and where are they based?
- Is the manufacturing process according to sustainability norms and good manufacturing practices?

2
Supplier Assessment

- What is the end purity of the product and is it applicable to other food & beverage products?
- Are suppliers capable of providing food grade natural extracts on a global basis?
- What is the cost/price of food grade natural extracts?
- Which are the regulatory approvals gained for food grade natural extracts?
- What is the extent of the supplying network of the producer?

3
Benchmarking

- Benchmarking was carried out using the dynamic benchmarking tool, which helped the client identify the most relevant partners.

Context

- The client wanted to conduct a study to obtain insights related to the global mapping of industrial suppliers of natural extracts.
- The objective of the study was to identify suppliers that meet regulatory standards and have the capacity to increase production and facilitate procurement and enrichment of natural extracts.
- The client was also interested in collaborating with shortlisted players.

Key Business Questions

- Is the supplier capable of providing a qualitative product?
- Do suppliers comply with good manufacturing practices?
- Has the product been approved by regulatory boards?

Research Methodology

Secondary Research

- Conducted desk research to identify suppliers and evaluate food-grade natural extracts for their applicability in the food & beverage industry
- Identified quality attributes of these products, such as regulatory approvals and purity

Benchmarking Dashboard

- Benchmarking dashboard was created to rank suitable partners utilizing both, qualitative and quantitative parameters.

Benefits to Client

- Update on suppliers for the compound "Trigonelline"
- Potential collaboration avenues

Sample Analysis

1 Supplier Landscape

Food grade Trigonelline are offered largely by Chinese manufacturers extract using fengreek solvent extraction method

- Majority of the manufacturers and suppliers have been recorded from China
- Food grade Trigonelline compound offered for large-scale production were extracted from **Fengreek**
- Trigonelline from other plant sources such as coffee and synthetic source are under **research** and are not available for large scale manufacturing
- Solvent extraction** is the most common method used for extracting Trigonelline
- Water and alcohol** were the common solvents using for extraction in China
- Indian companies - Pioneer Enterprises and Food Nutrals were recorded to use **Super Critical Fluid Extraction method**

Geography distribution of manufacturers

Extraction methods used by manufacturers

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2 Supplier Assessment

Benchmarking Matrix

| Benchmarking Matrix - Weightage and Score | | | | | | |
|---|--------|----------------|------------------------|--|---|--------------------------------|
| Parameter | Weight | 1 | 2 | 3 | 4 | 5 |
| OSIP | 5 | No information | No OSIP | OSIP or INCCIP / Other manufacturing plants in India (e.g. ISO, DMG) | | OSIP certified |
| Regulatory compliance | 3 | No information | 1 | 2 to 4 | | 4 |
| Geography match | 2 | No information | Local | Multiple regions (2-4) | | Global: More than four regions |
| Purity | 4 | No information | <10% | 10%-95% | | >95% |
| Price range | 2 | No information | <200 /kg | 20-200 /kg | | >20 /kg |
| Supply capacity | 2 | No information | 0.1 - 5 Tons per month | 5.1 - 10 Tons per month | | >10 Tons per month |

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3 Benchmarking

Huibo Organic Biotech, Naturalin, Sorwu, and XIACAO have GMP production units to manufacture and supply 98% Trigonelline extract at high supply capacity

| Sr. No. | Company Name | Cumulative Score | Headquarters | Regulatory Compliance | Purification Specification | Product Price (USD \$) | Supply Capacity | Technology for Preparation |
|---------|----------------------------|------------------|---------------------------|--|--|------------------------|---|----------------------------------|
| 1 | Huibo Organic Biotech | 113 | Jiangxi, China (Beifang) | OSIP, ISO, GMP, CERS (under way), FDA, INRAL, Kosher | 98% Trigonelline | \$4-14 / Kilograms | 20 Tons/Tons per Month Annual capacity: More than 200 Tons/tons per year | Solvent Extraction |
| 2 | Naturalin Bioresources | 91 | China | OSIP, ISO, GMP, INCCIP, Kosher, Halal | 98% Trigonelline hydrochloride extract, Fengreek | \$15-18 / Kilograms | 300 Tons/Tons per Year | Water/Alcohol Solvent Extraction |
| 3 | Sorwu | 91 | Shandong, China (Beifang) | OSIP, ISO, GMP 2000, ISO, BRC, CGC, INCCIP | 98% Trigonelline | \$15-18 / Kilograms | 10 Tons/Tons per Month | Solvent Extraction |
| 4 | XIACAO Biotech Development | 91 | Shandong, China (Beifang) | OSIP, ISO, CERS certified | 98% Trigonelline | \$5-10 / Kilograms | 20 Tons/Tons per Month | Liquid-Solvent Extraction |

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Thank you

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