CBI Product Factsheet:

Paprika oleoresin in Europe
Introduction

If you are able to guarantee consistent quality and quantity of paprika oleoresin, you can explore the many opportunities that the European market offers. Paprika oleoresin fits very well within the trend towards ‘clean labelling’, but European buyers have difficulty securing paprika oleoresin of good quality.

Product definition

Paprika oleoresin is an oil soluble extract from the fruits of *Capsicum annuum* Linn or *Capsicum frutescens* (Indian red chillies), which is primarily used as a colouring and/or flavouring in food products. Paprika oleoresin is famous for its colouring properties, due to the content of carotenoid pigments, mainly capsanthin and capsorubin. Foods that are coloured with paprika oleoresin include cheese, orange juice, spice mixtures, sauces, sweets, and emulsified processed meats. Paprika oleoresin also contains capsaicin, which is the main flavouring compound that gives a pungent taste in higher concentrations.

Codes for paprika oleoresin:
- CAS numbers: 84625-29-6
- Harmonised System (HS): No separate code for paprika oleoresin. Paprika oleoresin is included in 32030010 (i.e. colouring matter of vegetable origin)
- E-number: 160c

Product specifications

Quality

Please refer to [CBI Market Intelligence on chillies](#) for information on chillies (i.e. paprika powder), including harvesting and grading.

The properties of paprika oleoresin are primarily related to origin. However, processing also affects the properties.

Ensure compliance with strict maximum residue levels for pesticides and fertilisers of European buyers.

Prevent contamination by mycotoxins of paprika powder, the raw materials for oleoresin extraction. Apply high quality standards during harvesting and processing.

Minimise time between harvesting and extraction to minimise colour degradation.

Major colouring pigments of paprika oleoresin: Trans Capsanthin, Capsanthin 5, 6 – Epoxide, Beta Cryptoxanthin, Beta Carotene, Zeaxanthin, Antheraxanthin, Violaxanthin, Capsorubin, other Carotenoids (Lutein, Neoxanthin etc.)

Depending on the application of the oleoresin by the buyer, as a food colouring and/or flavouring, you can add value to the product by separating the capsaicin from the carotenoid pigments.

Use the extraction method (pressure, time, temperature) which is most appropriate for production of the oleoresin with a composition according to buyer preferences.

Methanol, hexane and isopropyl alcohol are solvents commonly used for paprika oleoresin extraction. Minimise solvent residue after extraction.

Prevent adulteration and contamination by foreign materials (e.g. artificial colours or anti-oxidants) to preserve your reputation. Importers regularly analyse products for adulteration.

Colour intensity is the main quality aspect of paprika oleoresin. Colour intensity can be measured in Colour Units (CU) or ASTA units. The colour intensity can range from 10,000 to 140,000 CU or 250 to 3,500 ASTA units.

Consistent colour intensity is crucial. Deviation from the buyer’s specification should be no more than 1,000 CU. If you standardise the colour intensity with vegetable oil (e.g. sunflower oil), do not use oil from a Genetically Modified crop. Also inform your buyer about the vegetable oil.

Stability of the oleoresin in different light and heat conditions is highly appreciated by buyers.
Consider to widen your product range by offering a water soluble paprika oleoresin. You can add an emulsifier to achieve this. Inform your buyer about the emulsifier.

Labelling

- Enable traceability of individual batches, whether they are produced by blending or not
- Use the English language for labelling unless your buyer has indicated otherwise
- Labels must include the following:
  - Product name
  - Batch code
  - If the product is destined for use in food products
  - Name and address of exporter
  - Best before date
  - Net weight
  - Recommended storage conditions
- Paprika oleoresin is not defined as hazardous material and does not require any hazard labelling.

Packaging

- Ensure preservation of quality by:
  - Using clean food grade containers of a material that does not react with constituents of the extract (e.g. lacquered or lined steel), aluminium or glass.
  - Filling the headspace in the container with a gas that does not react with constituents of the extract (e.g. nitrogen or carbon dioxide).
- Enable re-use or recycling of packaging materials by, for example, using containers of recyclable material (e.g. metal).

Buyer requirements

What legal requirements must my product comply with?

**Food safety:** Food processors must have a food safety management system in place based on HACCP principles. These systems require companies to demonstrate their ability to control food safety hazards in order to ensure that food is safe at the time of human consumption. Furthermore, products must be traceable throughout the supply chain. If European
companies or authorities find out that the safety of your product cannot be guaranteed, they will take the product off the market and will register it in the EU’s Rapid Alert System for Food and Feed.

**Tip:**
- Search in the EU’s Rapid Alert System for Food and Feed (RASFF) database to see examples of withdrawals from the market and the reasons behind these withdrawals.

**Contamination:** The EU has laid down maximum levels of contaminants, pesticides and criteria for microbiological contamination of food.

**Tips:**
- Minimise contamination of your product during growing, processing, packaging, transport and storage:
  - Do not make excessive use of chemicals. If the paprika for your oleoresin has been treated with pesticides, verify that the residues are within legal limits. Use the EU Maximum Residues Level (MRL) database to find out which MRLs are relevant for your product
  - Safeguard hygiene in your facilities
  - Pay attention to drying and storage to minimise microbiological contamination
- Stricter legislative requirements regarding microbiological contamination may cause countries which traditionally focused on the spice market to switch to the oleoresin market. Solvent extraction can reduce microbiological activity but requires greater investments.

**Extraction solvents:** There are EU rules for the marketing and application of extraction solvents used in the production of foodstuffs and food ingredients.

**Tip:**
- Minimise residues of extraction solvents in the cardamom extract and ensure that they do not present a danger to human health. Learn more about this topic from the EU export helpdesk: extraction solvents used in foodstuffs.

**What additional requirements do buyers often have?**

**Food safety certification:** As food safety is a top priority in all EU food sectors, you can expect many players to request extra guarantees from you in the form of certification. Particularly many European food manufacturers require their suppliers to implement one of the following (HACCP-based) food safety management systems: BRC, IFS, ISO 22000 or SQF.

**Tip:**
- Visit the website of the Global Food Safety Initiative and the Standards Map for more information on food safety management systems. Also find out if the buyers you target require certification and which food safety management system they prefer.

**Religion:** European buyers commonly require certificates for compliance with Kosher and Halal requirements. This enables the food and beverage industry to use the ingredient in products targeted at a wide consumer group including Jews and Muslims.

**Tip:**
- Obtain Kosher and Halal certificates. Often this does not require changes in your processes. Refer to the Halal Authority Board or your certifier of choice for more information.

**Documentation:** Buyers need well-structured product and company documentation. Buyers generally require detailed Technical Data Sheets (TDS) and Material Safety Data Sheets (MSDS).
Tip:
- Make sure that you have documentation (e.g. certificate of analysis, MSDS, food safety management certificates) available upon request. Buyers generally require a detailed TDS, which presents details about the composition of the extract, purity, etc. Prepare your TDS and MSDS in compliance with annex II of EU Regulation No 1907/2006. Here you can find an example of a MSDS for a paprika oleoresin extract.

Representative samples: Your sampling method should result in lot samples that represent what you can deliver in the quantities, quality and lead time as specified by the buyer.

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Delivery terms: Pay attention to strict compliance with delivery terms as agreed upon with your buyer.

Tip:
- Familiarise yourself with international delivery terms.

Website: European buyers look for credible suppliers. You can improve the perceived credibility of your company by developing your website accordingly.

Tip:
- Somerex (Peru) is a paprika oleoresin supplier with a website that serves as a good example: http://www.somerex.net/.

What are the requirements for niche markets?

Certified sustainable: Although many European buyers require their suppliers to address sustainability, only few of them require corresponding certificates. For example, demand for organic certified stevia is still very small.

Tips:
- Only consider certification of organic or otherwise sustainable production if you specifically target the niche market for these products. In that case, you will have to comply with requirements in EU legislation 834/2007.
- Visit the ITC’s Standards Map for more information on certification schemes for sustainable production.

Trade and Macro-economic statistics

Demand for colouring foodstuffs increases
The European market for paprika oleoresin is a relatively large market, compared to markets for other oleoresins. The volume of consumption is estimated at around 2 thousand tonnes (Olam, 2013).

Increased demand for colouring foodstuffs is one of the drivers behind the increase in demand for paprika oleoresin. The establishment by colour manufacturer Chr. Hansen of a big new oleoresin extraction facility in India in 2006 can be interpreted as a sign that this market has a lot of growth potential.

Globally, paprika oleoresin production is strongly related to paprika powder production. High prices for paprika powder (e.g. before harvest of next crop) decrease the economic attractiveness of paprika oleoresin extraction.

As paprika can grow in Europe and harvesting can be done mechanically, domestic production is considerable. However, oleoresin extraction is limited, as most paprika is destined for the fresh market or dried and marketed as paprika powder.

Spain, a major paprika producer, also imports dried paprika for oleoresin extraction. Spain has more extraction capacity than production of paprika for oleoresin extraction. Evesa (http://www.evesa.com/) and Ingredientes Naturales
Seleccionados (http://ingrenat.com) are the leading oleoresin producers in Spain. Evesa has a processing capacity of 300 tonnes annually.

Most European demand for paprika oleoresin is estimated to be met by imports. Globally, an estimated 7-8 thousand tonnes of paprika oleoresin are produced annually. India, Spain, China and Peru are among the major suppliers of oleoresin to Europe. In 2012, Indian production amounted to 3.6 thousand tonnes.

North European countries are estimated to account for most European imports of paprika oleoresin, which is estimated at a few thousand tonnes.

As the European food industry is expected to continue increasing its demand for colouring foodstuffs, demand for paprika oleoresin is expected to grow.

**Tips:**
- Promote clean labelling opportunities for food manufacturers.
- Find out how your product compares to Spanish paprika oleoresin and what your Unique Selling Points (USP) are.
- If you are based outside the traditional supplying countries, stress that you offer an alternative source of paprika oleoresin in your promotion.
- Focus your promotion efforts on North European countries or establish a strategic alliance with Spanish producers.
- Please refer to CBI Trade Statistics for natural colours, flavours and thickeners for more trade statistics on a more general sector level.

**Trends**

**Preference for colouring foodstuffs:** Food manufacturers increasingly use foodstuffs with colouring properties instead of colourings. This enables them to keep the labels of their products clean.

**Tip:**
- Maximise stability of paprika oleoresin to enable food manufacturers to use this product instead of synthetics

**Salt reduction proves to be a challenge:** Many Europeans consume more salt than is healthy for them. Therefore, demand for products containing less salt is strong. In response, many food manufacturers aim to reduce salt in their products. As they do not want to compromise on taste, they use other ingredients to mask the salt reduction. Paprika oleoresin can offer this function.

**Tips:**
- Raise awareness about the potential of paprika oleoresin for salt reduction and enable easy substitution
- Please refer to CBI Trends for more market trends.
Market channels and segments

Market channels

Figure 1: Major market channels for paprika oleoresin

European intermediaries add more value

- Instead of focusing solely on the dried paprika market, paprika suppliers have good opportunities on markets for value added products as well.
- European extraction companies still play a major role in the processing of paprika oleoresin. They sometimes extract the oleoresin from dried paprika, purify an imported oleoresin or standardise products by blending oleoresins from different origins.

Tips:

- Producers of paprika oleoresin with low residual pungency can promote the use of their product in blends with Indian oleoresin to reduce the pungent taste of the latter
- Please refer to CBI Market channels and Segments for more information

Market segments

Table 1. Major segments and applications for paprika oleoresin

<table>
<thead>
<tr>
<th>Segment</th>
<th>Application</th>
<th>Particularities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dairy</td>
<td>Cheese</td>
<td>This application requires absence of residual pungency</td>
</tr>
<tr>
<td>Savoury</td>
<td>Sauces</td>
<td>A spicy or pungent taste of paprika oleoresin can be appreciated for these applications</td>
</tr>
<tr>
<td>Meat</td>
<td>Seasonings and spice blends</td>
<td>A spicy or pungent taste of paprika oleoresin can be appreciated for these applications</td>
</tr>
<tr>
<td>Beverages</td>
<td>Juices</td>
<td>This application requires absence of residual pungency</td>
</tr>
<tr>
<td>Confectionery</td>
<td>Sweets</td>
<td>This application requires absence of residual pungency</td>
</tr>
</tbody>
</table>
Few opportunities for organic paprika oleoresin

Paprika oleoresin is applied in food in small doses. Due to these very low doses, manufacturers of organic food often make use of an exception rule in the organic regulation. They may use a small amount of non-organic ingredients, but still label the product as organic. Therefore, demand for organic certified paprika oleoresin remains small.

Tip:
- Only opt for organic certification if an existing buyer expresses strong interest.

Price

India exerts downward pressure on global prices

India accounts for around half of the estimated global production of paprika oleoresin. As India prices aggressively, the country dictates global prices for paprika oleoresin.

In the past decade, prices for paprika oleoresin fluctuated around € 18/kg. Fierce competition from India has occasionally driven prices down to around € 18/kg.

Between 2009 and 2012, prices of paprika and paprika oleoresin increased to around € 27/kg. Bad crops and higher legislative requirements regarding levels of toxins have driven up prices.

Since the end of 2012, prices came down to € 23/kg again. In 2013, the market was stable.

In early 2014, price levels were still relatively low. However, prices may go up again, as farmers in the major production country, China, have planted less paprika (Olam, 2013).

Currently, both India and China have difficulties in obtaining good raw materials for production of high colour value oleoresins. Prices are expected to rise.

Tips:
- Monitor harvests in the major production countries (e.g. India: http://www.indianspices.com) to anticipate price developments.
- Reduce raw material costs by improving yields or increasing production scales. For example, irrigation can extend cropping periods and thereby improve yields.
- Further improve your price competitiveness by improving extraction yields.

Price breakdown

Prices of essential oils for end-users (i.e. food and beverage manufacturers) are usually 2-3 times the export price (FOB). The following price breakdown shows which mark-ups are applied by the importer. This breakdown does not specify mark-ups applied by other intermediaries, such as blenders.

Figure 2: Price breakdown for paprika oleoresin, mark-ups in %

![Price breakdown diagram]

Source: ProFound, 2015

If agents are involved, they typically receive a commission of a few percent (2-5%). However, their actual profit margin strongly depends on volumes sold and gross margin. They will normally lower their gross margin for big volumes.

Importers add up to 25-100% to the value of the product depending on the activities undertaken, such as stocking and rectification.
Blenders add up to a few hundred percent depending on their activities, such as R&D, fractionation and blending.

Distributors add up to 60% to the value of the product when the orders are very small (<1kg).

**Tips:**
- Agents are particularly interesting if you do not have a strong sales network. However, once you have established a trade relationship through an agent, you cannot establish a direct relationship with the buyer anymore. The sales network of the agent is protected by law.
- Add value to your product by blending the oleoresin from different sources to standardise the quality of your product.

**Competition**

**Competition comes from many regions**

India is one of the biggest suppliers to Europe. The following companies in India hold a major share in the European paprika oleoresin market: Synthite, Universal Oleoresins, Plant Lipids, Kalsec natural ingredients and Naturex.

In terms of stability under different heat and light conditions, Peruvian and Chinese paprika oleoresin do not perform very well. India’s paprika oleoresin is better in that respect and Spain produces the most stable paprika oleoresin.

Paprika oleoresin from African origins has a bad reputation with respect to microbiological activity.

Paprika oleoresin, when used as a colouring, is difficult to replace. Nonetheless, annatto and cochineal can sometimes replace paprika oleoresin, as they are also natural reds.

Switching costs for European buyers are relatively high, because of high costs for product analysis as part of the supplier audit.

In many applications, paprika oleoresin is easier to use than paprika powder. Oleoresin dissolves notably better in oily liquids.

Oleoresin extraction requires expensive equipment and considerable expertise. These present high barriers to entry, especially for small scale paprika producers.

Flavour and colour profiles of paprika differ between origins. Depending on a buyer’s requirements, specific origins can be preferred. For example, Indian producers often use red chilli peppers with a high capsaicin content, which gives a pungent taste to the oleoresin.

Peru can produce paprika oleoresin almost year-round (January-October). In India, the harvests take place in January and April.

**Tips:**
- Select a paprika variety with an optimal balance between yields and preferred properties. If you want to avoid competition with India, select a variety with less residual pungency, better colour intensity and/or high stability.
- Promote the ease of use for oleoresin and the possibility to replace paprika powder.
- Suppliers of paprika (powder) can cooperate with specialised extraction companies (in other countries) if they are unable to do the extraction themselves.
- **Tips:** Producers using red chilli peppers must reduce capsaicin content if they aim to supply food manufacturers which need oleoresin with low residual pungency.
- The off-seasons in traditional origins, including Spain offer windows of opportunity.
- Please refer to [CBI Competition](#) for more information.
Main sources

Trade fairs

- SIAL (http://www.sialparis.com/)
- Food Ingredients Europe (http://fieurope.ingredientsnetwork.com/)
- Anuga (http://www.anuga.com)
- Alimentaria (http://www.alimentaria-bcn.com)
- Biofach (http://www.biofach.de)
This survey was compiled for CBI by ProFound – Advisers In Development in collaboration with CBI sector expert Franz-Peter Meschede

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November 2015