

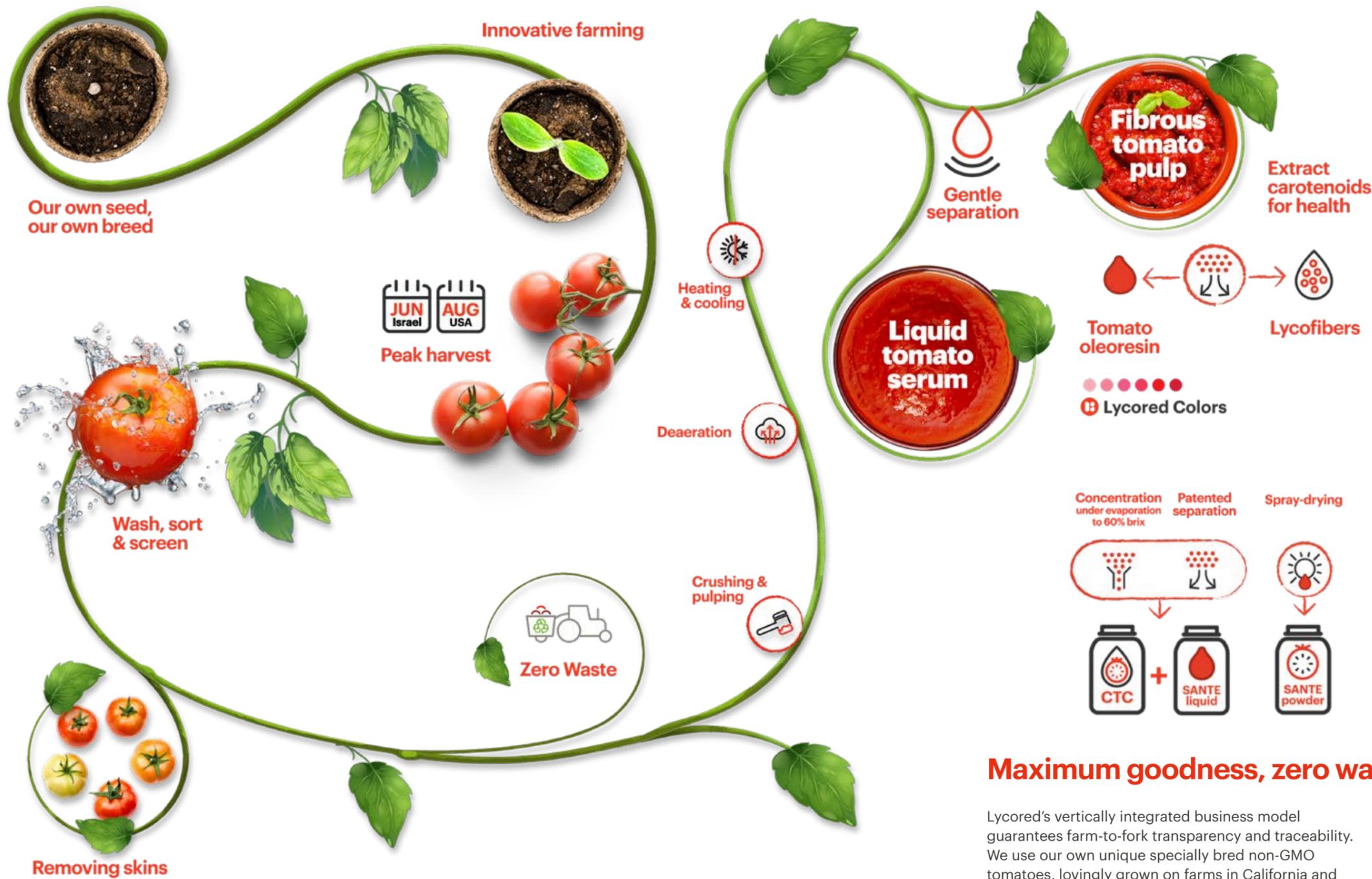


**Lycored**

**Deliciousness Naturally  
with the Tomato Dream Team**

100% tomato foodstuffs for taste,  
texture, value and a cleaner label





## Clean label and more

Clean label used to be seen as a trend. It is now the norm, with half of all shopping trips including the purchase of a clean label product<sup>1</sup>.

Consumers want their food to be made of simple, recognizable, natural ingredients. Globally, nearly seven in ten (69%) consumers believe foods without artificial ingredients are always healthier, and over half (52%) believe products with fewer ingredients are healthier<sup>2</sup>.

They also expect manufacturers to be able to tell a story about what is in their food, not just what isn't. More than seven in ten shoppers surveyed by Nielsen say they feel positively about brands that share "why behind the buy" information about their products<sup>3</sup>.

There are clear rewards for companies that respond to the demand for clean label. Two thirds (68%) of consumers are willing to pay more for products that do not contain undesirable ingredients<sup>4</sup> and nearly three quarters are happy to pay a higher retail price for products made from ingredients they recognize and trust<sup>5</sup>. Nearly four in ten say they would switch from their current brand to one that offers more transparency<sup>6</sup>.

In tune with the needs of consumers, Lycored offers Real Food Ingredients made from 100% tomato, enabling formulators to label products with reassuringly simple food declarations that consumers recognize.

But clean label is only part of the value we offer. Manufacturers who take advantage of our 100% tomato foodstuff range can offer consumers a better taste and texture experience, while enjoying a range of production benefits, including higher yield.

## Maximum goodness, zero waste

Lycored's vertically integrated business model guarantees farm-to-fork transparency and traceability. We use our own unique specially bred non-GMO tomatoes, lovingly grown on farms in California and Israel. They are naturally four times richer in lycopene than standard tomatoes and rich in naturally occurring taste compounds, including glutamic acid and other amino and organic acids which provide umami and kokumi character.

Lycored's holistic production process ensures that none of the goodness from our special tomatoes is wasted. First they are washed and their skin and seeds removed to prevent exposure to external pollutants and toxins.

Then our dedicated sorters screen and select the ripest and the best tomatoes, carefully choosing those whose metabolites are at the top of their game to produce the best possible taste. Any waste skins are repurposed for use in agriculture.

Then our proprietary extraction process comes into its own. It ensures that the delicate pigments, fibers, and liquid serum are separated from the pulp as efficiently as possible, all without the addition of chemicals. This provides the foundation for our 100% tomato foodstuff range.

## Introducing the Tomato Dream Team

Lycored's Real Food Ingredients range builds on the goodness of tomatoes to enhance the taste, color and texture of food, and to provide an inherent nutritional advantage. Our Tomato Dream Team offers perfect solutions in a range of categories, in particular condiments, pizza, pasta sauces and soups.

The team is made up of three key players:



### SANTE

Our natural taste enhancer provides a high concentration of the compounds that produce umami (the fifth taste) and kokumi (the Japanese word for deliciousness).

Standing for Salt and Natural Taste Enhancer, SANTE accentuates existing flavor characteristics while remaining taste neutral, allowing it to be applied to savory and sweet recipes alike. SANTE can be used in liquid or powder form.



### Clear Tomato Concentrate (CTC)

A concentrated serum with a savory character that offers a sweet tomato acidity and a smooth balancing taste effect. In tomato-based products, it also increases taste intensity, providing a "Tomato Addback" effect.



### LycoFibers

These modify the pulpiness, viscosity and mouthfeel of sauces, soups and meat products. The unique texture they provide cannot be achieved reliably using other texturizers. They lend products a pleasant pulpy fiber mouthfeel without the slimy consistency of formulations that rely on alternative stabilizers such as gums and starches. In meat products they can provide succulence and help increase yield.





### Sodium reduction – an opportunity to add, not just take away

According to the World Health Organization (WHO) cardiovascular disease accounts 31% of all deaths worldwide – more than any other illness<sup>7</sup>.

Evidence shows that reducing sodium intake significantly reduces blood pressure in adults. WHO now recommends that adults consume no more than 2000mg of sodium (5g of salt) per day. And in 2016, the American FDA issued draft guidance to the food industry calling for “reductions across a broad range of food categories with high and moderate amounts of sodium”. Its main focus was on processed and packaged foods.

Consumers have taken note. According to the International Food Information Council’s 2017 Food and Health Survey, more than six in ten Americans have cut back on foods higher in salt<sup>9</sup>.

The food industry tends to discuss sodium reduction as a challenge, but it is also an opportunity. We often focus on what is being taken away, but the impetus to reduce sodium can also inspire manufacturers to add qualities that appeal to consumers – in particular improved taste and umami impact.

#### Sweetness without the refined sugar

Due to the taste neutral aspect of SANTE, it provides the amazing benefit of simultaneously enhancing sweetness as well as saltiness in recipe. It can also work very well in synergy with other sweetness enhancing ingredients. It provides great opportunity for zero added sugar and salt claims.



**230%**

Growth of “umami” callouts on menus over the past 5 years\*  
(Source: Technomic Report 2019)



**138%**

Growth of operators featuring “umami” callouts on menus over the past five years  
(Source: Technomic Report 2019)

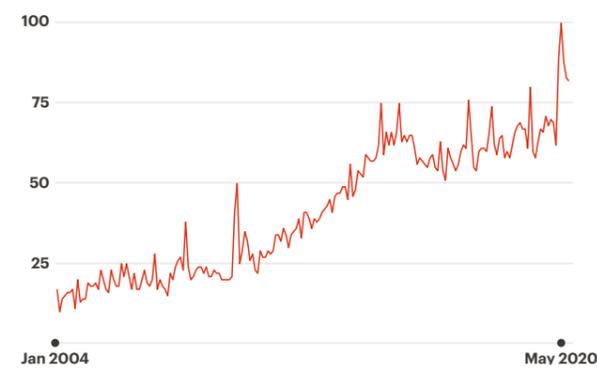
### Umami in – MSG out

Umami, meaning ‘delicious taste’, is known as the fifth taste (after bitter, sweet, salty and sour.) Its savory, meaty character is detected via the taste receptors for glutamate.

In the 1980s umami was recognized in the west as a discernible taste and over the past ten years – as a search on Google Trends reveals – consumer interest has rocketed. It is a sign of mainstream awareness that the US restaurant chain Umami Burger now has over 25 branches.

Historically, the most common means of achieving umami was the addition of Monosodium Glutamate (MSG). However, concern about the impact of MSG on health remains very high. Half (49%) of consumers globally say they avoid MSG and this figure rises to 55% in North America<sup>10</sup>. Nearly eight in ten (79%) say the reason they avoid MSG is because they believe it to be harmful to their own health, or that of their family<sup>11</sup>.

Increasingly, therefore, the holy grail for chefs and formulators is to achieve umami without using MSG or other artificial taste enhancers. There is also growing interest in kokumi – which means ‘rich taste’ and provides balance and a hearty mouthfeel. Kokumi is delivered by foods with the right combination of amino acids.



Over the past years consumer interest in UMAMI has rocketed  
(Source: trends.google.com)

### SANTE – Natural deliciousness without sodium, sugar or MSG

SANTE is a versatile, natural taste enhancer which delivers umami and kokumi even with low sodium content and without the help of MSG. Importantly, it manages to combine these attributes with a clean and clear label. Manufacturers may declare SANTE as ‘tomato concentrate’ or ‘natural flavor’, according to local regulations. It is taste-neutral, with no overt tomato taste, so it can be used to boost the flavor of both sweet and savory products. It is ideal for use in soups, sauces, marinades and ready meals. In its powdered form SANTE can also be applied as part of a seasoning mix for products such as potato chips and extruded snacks, and in spice blends for meat products.

Low dosages of SANTE (between 0.15 and 25%) are sufficient to deliver a highly accentuated taste experience, and it is stable across a wide range of temperatures and pH. As well as providing all these positive attributes, SANTE enables formulators to reduce or eliminate a range of ingredients with negative labeling connotations, such as MSG, ribonucleotides, yeast extracts and hydrolyzed vegetable proteins. In addition, thanks to its ability to enhance the salty flavor of products, SANTE allows a reduction in sodium from salt – by nearly 65% in some applications.

The secret of SANTE lies in the high levels of naturally occurring glutamate in the Lycored Lycopen rich tomatoes. Glutamate occurs naturally at high levels

in many delicious foods, such as ham and Emmental cheese, Nori seaweed and scallops. The tomato source for SANTE has an amino acid concentration of almost 9%, of which 32% is naturally occurring glutamate.

SANTE is a “silver bullet” – a catch-all taste enhancer that allows manufacturers to deliver delicious taste while cleaning up their entire label. SANTE provides the ideal opportunity for creating healthy craveability.

#### In addition to flavor boosting, SANTE successfully addresses specific challenges within the culinary environment.

- Allows reduction in higher fat ingredients such as cheese or cream in sauces, without losing organoleptic appeal
- Rounds off peaks in high acid or bitter tastes to create balance in dressings or vinaigrettes
- Enhances the taste effect of liquid or dry marinades, as well as rubs and spice blends, can add savory meaty taste impact to the meat itself
- Ideal for enhancing seasonings and snack seasonings with an extra boost of taste for topical application



**Success story: SANTE can be used in low-salt baby food for a tastier product which is still safe and healthy.**



 **Clear Tomato Concentrate**

**Clear Tomato Concentrate (CTC) – Bringing back the Brix**

CTC (Clear Tomato Concentrate) is a liquid that acts as a natural tomato addback taste improver particularly for tomato based foods, bringing a smoother character to savory products such as soups, condiments and sauces. It intensifies the tomato character of tomato-based foods, “adding back” high Brix sweetness and acidity, and acting as an extender for tomato paste, the price of which can be volatile depending on harvest and climate.

Using CTC can also allow manufacturers to save on the energy that would be required to achieve concentration through heating. Its ability to “bring back the Brix” is particularly valuable in products where a lower grade of tomato has been used. These may add viscosity, but at

the expense of sweetness and taste. CTC can bring Brix levels back up. There is another specific benefit in the US, where it can help meet the level of Brix required for tomato solid volume level in ketchup.

CTC can be declared as consumer-friendly ‘tomato concentrate’ and it gives formulators a way to reduce or eliminate the use of less attractive ingredients. It is color-neutral and stable across a range of pH and temperatures. As well as delivering a better taste and a cleaner label, CTC is an understated gem in Lycored’s repertoire which gives tomato products the sweetness and acidity of the real thing.



**Success story:** CTC has been used very successfully in tomato paste products to enhance ripe tomato notes and improve product quality.



 **LycoFibers**

**LycoFibers – authentic texture, ‘made from scratch’ feel**

Formulators can modify the pulpiness, viscosity and mouthfeel of sauces, soups, ready meals and meat products naturally using our LycoFibers. Not only do they deliver a smoother texture and a cleaner label, they carry the additional benefit of fiber content.

Their high stability means that LycoFibers do not undergo syneresis when used in sauces. And while alternative stabilizers such as gums and starches can lead to a slimy consistency, LycoFibers deliver an authentic, home-made vegetable fiber effect, all without E-numbers, Gluten or carbohydrates.

LycoFibers also improve the juiciness of meat products and prevent burning of the meat when barbecuing.



**Success story:** LycoFibers have been used in a major brand’s BBQ sauce to provide authentic texture and glossy sheen without an “E-number” declaration



**Increasing yield, maximizing value**

LycoFibers, together with SANTE and CTC can dramatically add value to the production process of pastes and sauces by increasing viscosity. Stability trials at Purdue University have shown that our fibers maintain their improved viscosity for up to 12 months.

Manufacturers who use LycoFibers, SANTE and CTC can reduce the amount of paste they use by 25% and achieve the same yield, with a high quality taste character.. Manufacturers who use LycoFibers and CTC can reduce the amount of paste they use by 25% and achieve the same yield.

Using less liquid paste – the quality of which is not always reliable – has a range of benefits. It can mean higher output, higher standards, and lower spend on raw materials, ingredient storage, space and transport. For sauces, it can also stabilize the bottle fill process, so that manufacturers do not have to reject bottles that are not filled to the top.

Furthermore, unlike many starch variants, our fibers are not heat-sensitive. They are also pressure-independent – the viscosity level they can achieve is known from the outset, so will not change pressure levels (typically 90 degrees for ten minutes).

**Maximum benefits with the right machinery**

Our ingredients deliver the best results when used with the right machinery. In particular , the Urschel Comitrol (R) Processor Mill 1500/1700 produces optimal particle size and form for tomato applications, allowing manufacturers to improve yield, texture and appearance (due to a high speed blade mechanism rather than use of heat or pressure on fibers).

Used with either product in the Lycored fibers range it can increase tomato paste yield in smooth sauces or juices by up to 10%, while allowing removal of starch in most applications.

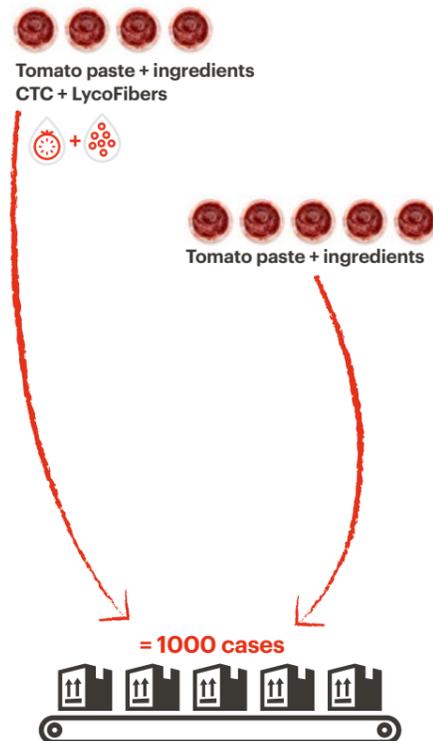
**Team players**

On their own each of our flavor and texture solutions can add value. But by working with them all together, manufacturers can achieve even more.

When the impact of each of our ingredients (SANTE, CTC and LycoFibers) and the ideal processes are combine taste, texture, viscosity and yield can all be improved. Due to the fact that both SANTE and CTC can be declared with the same label declarations in many regions, the number of ingredients on your label can be reduced, for a cleaner, shorter more attractive ingredient list.



**Success story: Manufacturers who use CTC, SANTE and LycoFibers together can achieve a 25% increase in yield using less tomato paste with improved taste. Reducing ingredient storage space and transport costs.**



**Benefits of Lycored’s Real Food Ingredients at a glance:**

-  **Foodstuff label declaration**

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-  **Cleaner label and a shorter ingredient list**

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-  **Stable across a range of pH and temperatures**

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-  **Allergen-free**

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-  **Vegan, Kosher and Halal**

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-  **Work excellently in synergy with one another and other ingredients**

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-  **Increase Fiber content**

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-  **Allows elimination of MSG and / or starches**

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-  **Healthier - lower sodium or sugar, and allows removal of other artificial enhancers**

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-  **Non-GMO (Non-GMO Project verified)**

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-  **Inherent goodness – naturally**

## About Lycored

Lycored is an international company committed to 'Cultivating Wellness' by harnessing the nutritional potential of nature using cutting edge science. The result is a growing portfolio of natural ingredients and products that formulators and consumers can recognize and trust.

Lycored's natural tomato ingredients allow customers to provide an 'inherent goodness' or better-for-you positioning for their products. Established in 1995, Lycored is based in Israel, with sales and production operations in the UK, Switzerland, the US, Ukraine and China.

### Studies

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