



SELECTED COFFEE YEASTS

LALCAFÉ™

NEWSLETTER N°1, APRIL 2021

What is Lalcafé?

Lalcafé is a range of *Saccharomyces* yeast selected from Lallemand yeast culture collection for coffee fermentation. Lallemand is expert in development and production of microorganisms for different applications (bread, oenology, plant care...). Lalcafé's current offering consists of a range of 4 selected active dry yeasts: Lalcafé Oro, Lalcafé Intenso, Lalcafé Cima and Lalcafé BSC. We offer technical support on how to best use the yeasts for fermentation control and by doing so, optimizing the coffee processing. As well the Lalcafé team can work closely with a producer or a roaster to find out which yeast can work at best with the local terroir and practices.

Lalcafé has worked for the last 8 years to develop and select the current range. We are continuously working in the field and in the lab to look for the next strain that would bring another twist to your cup!



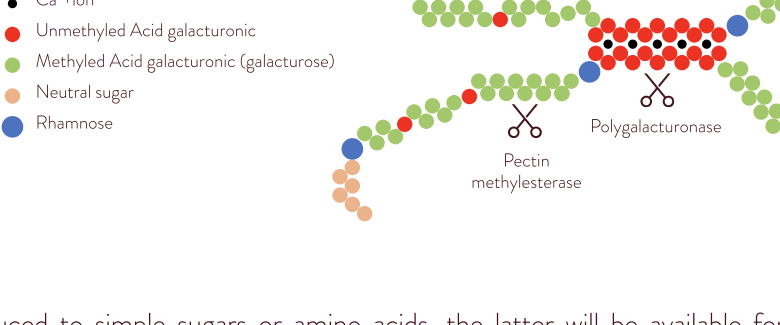
The two key roles of selected *Saccharomyces* in coffee fermentation

As commonly agreed, fermentation in coffee occurs during wet process when the pulped coffee sits in the tank for a given time. And to a lesser common knowledge, it also happens in Natural process: the coffee fruit, wounded or not is generally fully ripe and full of sugars. The millions of microorganisms present in the environment are straight away attracted to the source of sugar and start consuming and converting it. Whether the fermentation lasts 6h (minimum in washed process) or 96h, two main phenomena happen, demucilagination and one less cited and known, the generation of aromatic compounds via different metabolic chains.

The demucilagination of the coffee beans

The demucilagination is nothing more than the degradation of the long chain sugars — namely pectin — down to small chain or single unit sugars — namely acid galacturonic, rhamnose or fructose. As well, other compounds undergo a degradation into single metabolizable units: amino acids, fatty acids e.t.c. This is when the presence of the specially selected so-called *Saccharomyces cerevisiae* matters. Via its activity, either enzymatic that leads to the breakdown of long chain sugars, or its metabolism leading to acid generation, it will liberate or release the coffee beans from its different layers of mucilage. Indeed, the yeast secretes different enzymes to be able to supply itself with food. Some enzymes have been identified as useful to the breakdown of the mucilage: polygalacturonase (PG) and pectin methyltransferase (PME). Both act at different levels of the pectin chain, cutting methyls, or acid galacturonic allowing an easier access to the sugar monomers.

STRUCTURE OF THE PECTINE AND ACTION OF THE ENZYMES



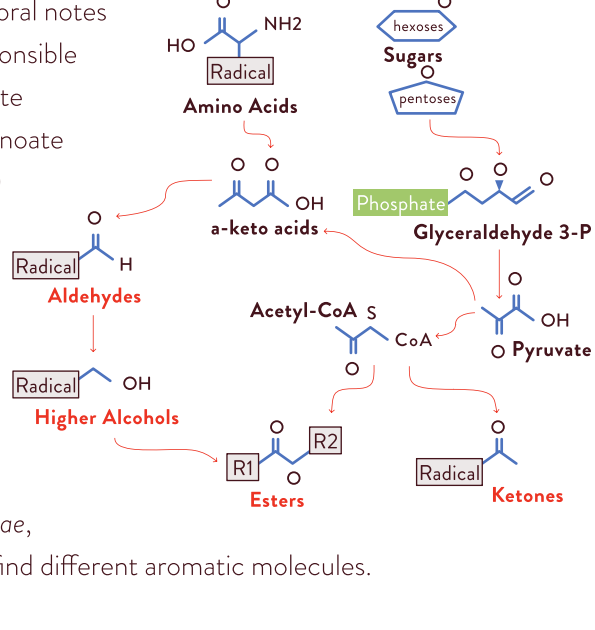
Reduced to simple sugars or amino acids, the latter will be available for the yeasts to actually ferment and activate its other metabolic pathways to generate the aromatic compounds: organic acids, esters and ketones, to cite a few.

All four Lalcafé yeasts have been screened on their capacity to secrete pectinolytic enzymes thanks to their inherent pool of enzymes. Lalcafé Oro has even been found to be slightly more equipped and shows an excellent action on Natural fermentation where more long chain sugars are left.

Generation of the aromatic compounds

Even though green coffee has its inherent compounds in terms of aromatic precursors (sugars, organic acids, amino acids...), the action of the fermentation in the sensory profile is not anecdotal. Many volatiles in coffee are the signs of a fermentative activity, which are, for example, generated by *Saccharomyces cerevisiae*. If you ever have the time and curiosity, try and process your coffee in a sterile environment, the cup profile will be dramatically impacted.

For the fruity and some floral notes found in the cup, the responsible are the esters: ethyl acetate (fruity, grape), ethyl hexanoate (Sweet, Fruity, Pineapple) or also phenyl acetate (Floral, Rosy). The ester generation can take different metabolic pathways. Below are the typical metabolic pathways for *Saccharomyces cerevisiae*, at different steps we can find different aromatic molecules.



Amongst all those molecules, three of our Lalcafé strains distinguish themselves in terms of aroma generation. For instance, Lalcafé Intenso at 24h of fermentation on the Pache varietal can show up to 6 times more Isoamyl-acetate than the control. This ester is known to give an odour of banana or pear.

Depending on the process, coffee cultivar, ripeness and drying conditions, each *Saccharomyces cerevisiae* of Lalcafé yeasts will be able to modulate your original profile by using the aroma precursors already present in the coffee.



Lalcafé is interviewing Timo Plötz, coffee producer, green coffee seller and Lalcafé yeasts user.

Timo is growing coffee in Brazil, in the area of Petunia in Sul de Minas. His farm's altitude is ranging from 1.050m to 1.250m.

So you have been producing some Lalcafé inoculated coffees, can you tell us about the process you chose?

I used Lalcafé Cima and Lalcafé Intenso on different varietals, Mundo Novo, Yellow and Red Catuai. As I like to experiment, I chose to process my inoculated coffees on anaerobic conditions. I used a 200L plastic container and flushed them with CO₂. In these conditions, I fermented some Natural lots for 72h and some Honey lots for 48h.

What benefits from the inoculation do you want to highlight?

Mainly for me, the benefit of using Lalcafé stands in the cup quality improvement. For the first approach the results have been amazing, the profiles very interesting. I believe that repeating the fermentation process year after year is possible. To me, that is the biggest advantage of using the yeasts, I believe you can deliver a more consistent coffee to the roaster.

Do you mention to your customer the fact that you have used yeast in the coffee you sell ?

I am always mentioning Lalcafé and the whole process method behind to our clients. I think this is very important to be transparent with the processing. And roasters generally want to know, they want to know what happened to the beans so they have some background to tell the story to their clients.

Did you manage to increase the price of your coffee ?

Having already a farmgate price about 4 times higher than the C-market, I managed to double the price with my Champion lot which scored 93pts. Even though it is always a question of finding the right customer at the right price, I think this can only help us elevate the price of our green coffee.

What tip would you give to other coffee producers who would like to use our products ?

Controlled environment. I don't mean the fancy infrastructure that would be very costly but already managing the fermentation in a shaded area, clean containers and cover them with a tarp is a really good start. If you can also check the pH to make sure this does not go, out of control.

For this first Lalcafé production, Timo collaborated with Luis, our Technical representative sales on the ground in Brazil. He also demonstrated the use of the yeast during a workshop held with 60 neighbor farmers. If you are interested in getting in touch with Luis in Brazil to get some support or buy our products, you can reach him by email at lfsantos@lallemand.com. And if you are interested in buying some fermented coffees, you can contact Timo directly timo@petunia.coffee and check his website <https://petunia.coffee>