Qi up

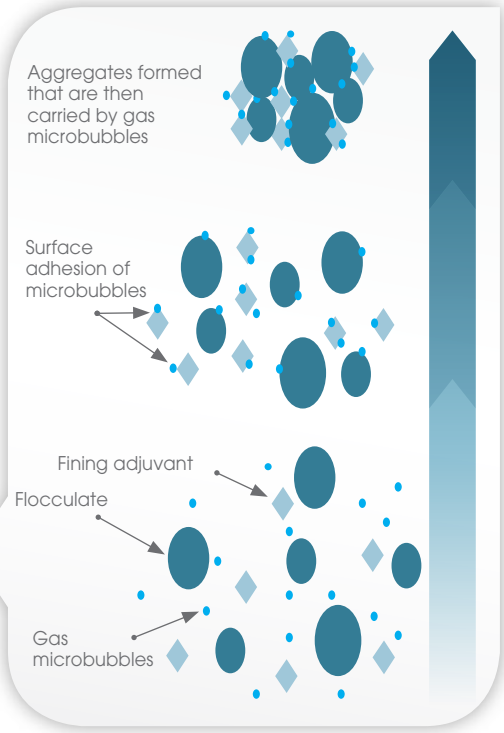
Gain height
by floating naturally

GAMME Qi
SOLUTIONS BIOTECHNOLOGIQUES

IOC
Révélons votre différence

La Flotation

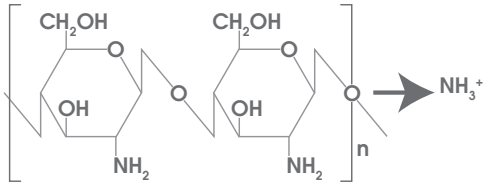
Flotation is a clarification technique for white, rosé and also red musts following heat treatment. This dynamic settling system consists of separating suspended particles in musts by attaching them around gas bubbles. Unlike static settling, the particles rise to be concentrated in a surface foam.
For these sediments to float, it is essential to use enzymes, in order to reduce the viscosity of the must and also to add fining adjuvants, providing better coagulation/flocculation.
This principle is well described in the literature[1-2] and in simple terms, the flotation adjuvant should help flocs to form, which can then be transported to the surface of the must by bubbles.

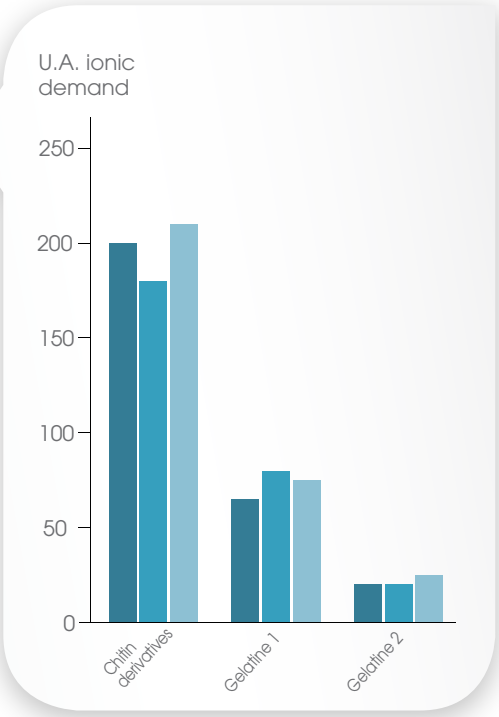


Principle of Flotation

Flocculation is the essential step in flotation.
Flocculants combine with colloids or particles from the must through essentially electrostatic bonds. The paper by Marchal et al summarises this flotation principle.

Chitosan comes from deacetylation of chitin. It is a charged molecule at the pH of must (pKa ≈ 6.5) giving it **excellent flocculation properties.**





Estimate of the quantity of surface charges of chitin derivatives compared with traditional flotation adjuvants in a model solution

The experiment opposite analysed the charges carried by chitin derivatives and two types of porcine gelatine.
Molecules were neutralised using a polyelectrolyte with the opposite charge.

Thus, it appears that at equal concentration in the solution tested, chitin derivatives are between four and ten times more charged than gelatines. The charge density depends on the pH, and at that of the must practically 100% of $-NH_2$ groups contained in the molecule are protonated in the form of $-NH_3^+$. This is an essential property for flocculating.

Gain height by flo

Qi up is a unique and innovative flotation adjuvant consisting of non-animal-derived biopolymers, free of all allergens and synthetic products.

Its efficacy and fast action allow it to float all types of musts while preserving the organoleptic qualities of the initial product.

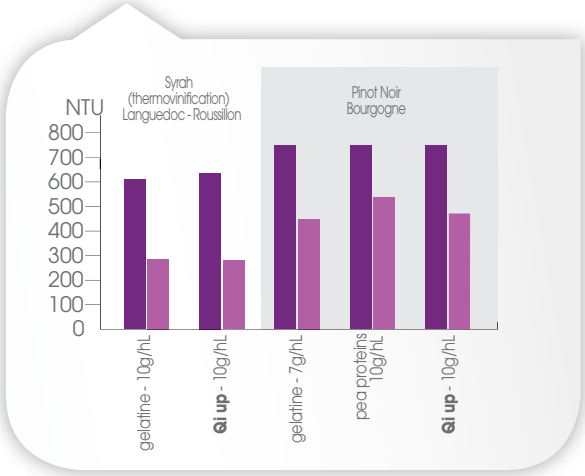
Qi up for rapid and efficient clarification

The results from two years of site tests demonstrate that clarification with **Qi up** is equivalent when compared with gelatine. And this is true for white, rosé and red musts from thermo-vinification.

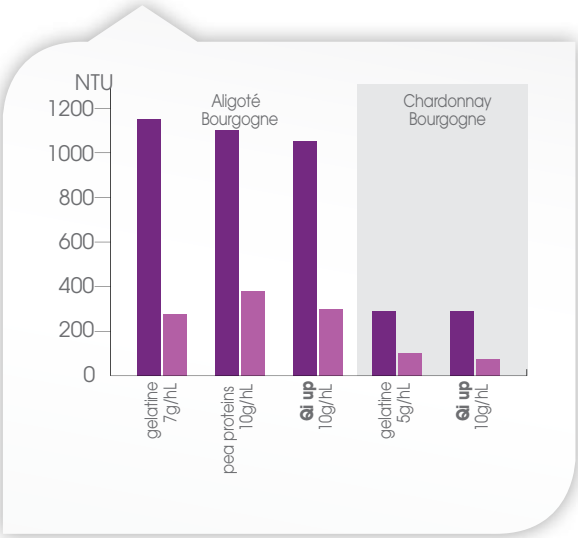
Average turbidities before flotation - in NTU

Average turbidities after flotation - in NTU

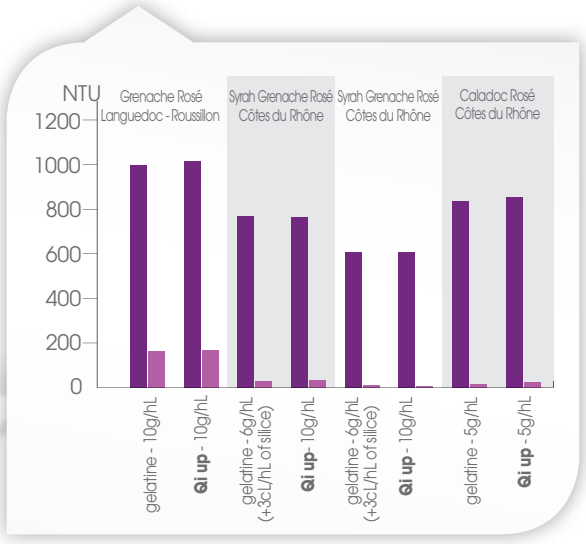
Clarifying effect of **Qi up** on red must from thermo-vinification



Clarifying effect of **Qi up** on white must



Clarifying effect of **Qi up** on rosé must

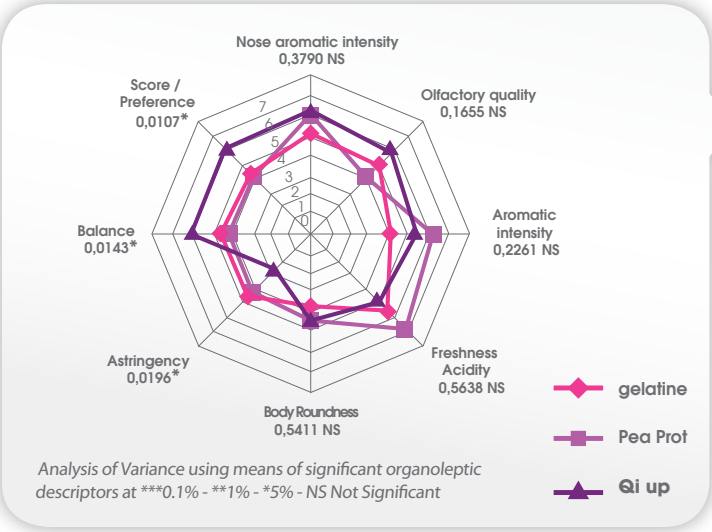


oating naturally

Qi up for preserving the sensory quality of your musts

Qi up preserves all the organoleptic qualities of musts as well as the wines made from them. Here are two examples of white and rosé musts. We compared the action **Qi up** compared with a solution of porcine gelatine and a solution of pea proteins.

All methods followed the same vinification process (same volume vinified, identical yeast strain, etc.). Sensory analyses (graphs 1 and 2) were performed during the 3 months following the end of alcoholic fermentation, based on the principle of quantified descriptive profiles.



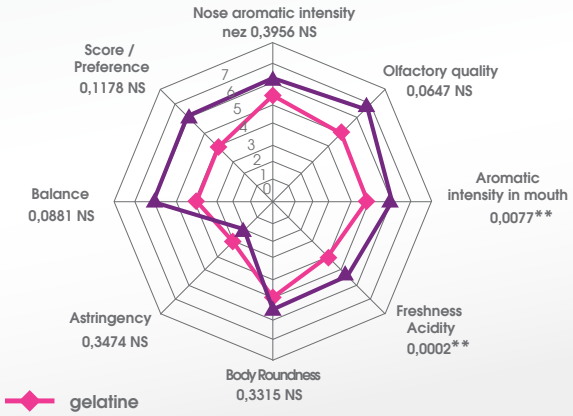
*Analysis of Variance using means of significant organoleptic descriptors at ***0.1% - **1% - *5% - NS Not Significant*

Graph 1
Mean of analysis of variance -
White wine from Aligoté (Burgundy)

The Qi up method differs significantly by its greater balance and reduced astringency.

Graph 2
Mean of analysis of variance - Rosé wine from Syrah and Grenache (Côtes du Rhône)

The Qi up method differs significantly by its greater aromatic intensity and greater freshness.



*Analysis of Variance using means of significant organoleptic descriptors at ***0.1% - **1% - *5% - NS Not Significant*

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IOC has developed the new Qi range of biotechnology solutions in order to produce wines in a natural way.

Qi : a range of genetically unmodified, non-allergenic, non-artificial, totally healthy products of vegetable origin that respect your wines.

UP : an effective flotation adjuvant that protects your musts

Non-animal-derived biopolymers :

new bio-tools for natural wine-making

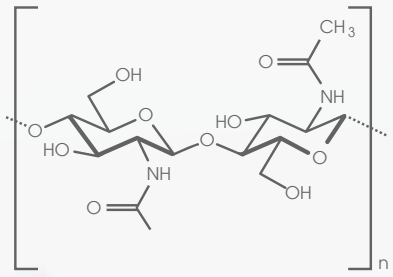
Modern oenology is seeking ever-healthier treatments to match consumers' expectations. So demand to use **non-allergenic, non-synthetic and non-animal formulations is booming.**

Polysaccharides as new biotechnologies:

Among the polysaccharides beneficial to Man, chitin and its main derivatives chitosan and chitin-glucan are becoming increasingly important. A great many studies have been carried out on these biopolymers over the last twenty years. Practically all fields of industrial applications are affected, from pharmaceuticals to food-processing, including the environment, agriculture, textiles, and cosmetics.

The use of these biopolymers in oenology is recent. They are finding diverse applications such as fining in the broader sense of the term (pre-clarification, reducing unstable colloids, etc.), reducing undesirable micro-organisms such as *Brettanomyces*[4-5] and capturing heavy metals[6-7].

Permitted as oenological practice by OIV (International Organisation of Vine and Wine) in 2009 and by the European Union in December 2010, these new biotechnologies are covered by several patent applications by the company KitoZyme.



Vegetals polysaccharides are friendly to health and the environment:

These biopolymers are biodegradable and bio-resorbable, two essential properties in these times when protecting the environment and human health play an important role. Furthermore, these products offered for oenology are plant-based, ensuring they are completely ***non-allergenic***.

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Qi up in practice

Disperse **Qi up** in at least 10 times its weight of water. There must be no lumps.

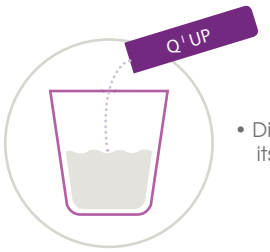
The suspension obtained must be stirred continuously during addition to the must.

Add to the must using a dosing pump.

Application dose:

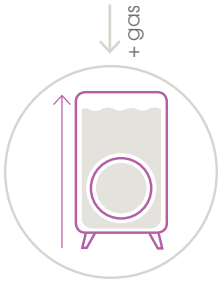
5 to 15 g/hL.

We strongly recommend performing a pectin test on the must before beginning flotation.



• Disperse **Qi up** in 10 times its weight of water

• Stir



• Add to the tank using a fining connection or a dosing pump.

Wait 1 hour

Decant

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