GUMS ARABIC

Protect what you value most

IOC

Révélons votre différence

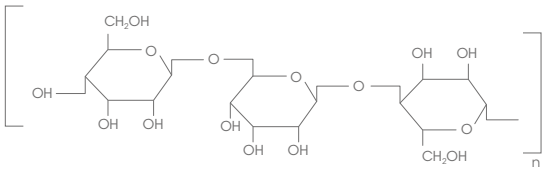
GUMS ARABIC

ORIGIN

Gum arabic is an exudate of solidified sap. It can be mixed naturally or by incision and run-off from the trunk and at the foot of trees belonging to the mimosa family (acacias).

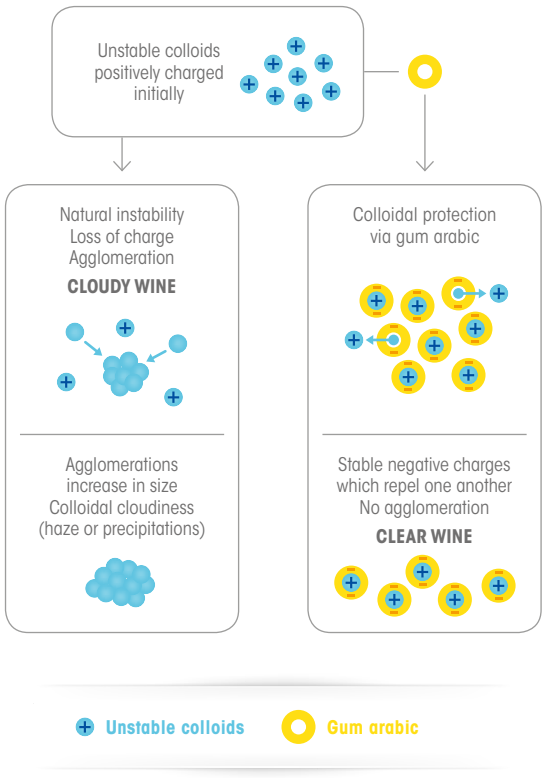
It is collected mainly in Saharan Africa.

Gum arabic is essentially a highly branched polysaccharide rich in galactose and arabinose with a small protein fraction.



HOW GUM ARABIC ACTS ON WINE

Gum arabic acts essentially as a protective colloid that counters precipitation of suspended particles. It fosters dispersion and suspension of colloidal substances by creating a lattice around them which prevents them from agglomerating.



EFFECTS ON WINES

There are two main families of gums arabic - stabilising and enclosing, each possessing remarkable properties.

STABILISING

Flashgum | Inogum | Inogum MF | Gomme arabique SD

Protecting against

- Precipitations of colouring material
- Metal precipitations (ferric and cupric)
- Tartrate precipitations, boosting metatartaric acid

Maintaining in suspension molecules liable to flocculate (including after disgorging for sparkling wines)

ENCLOSING

Flashgum R | Flashgum R MF

Reducing astringency

Heightens **body, roundness and pleasure** on the palate and enhances the sensory impression of wines.

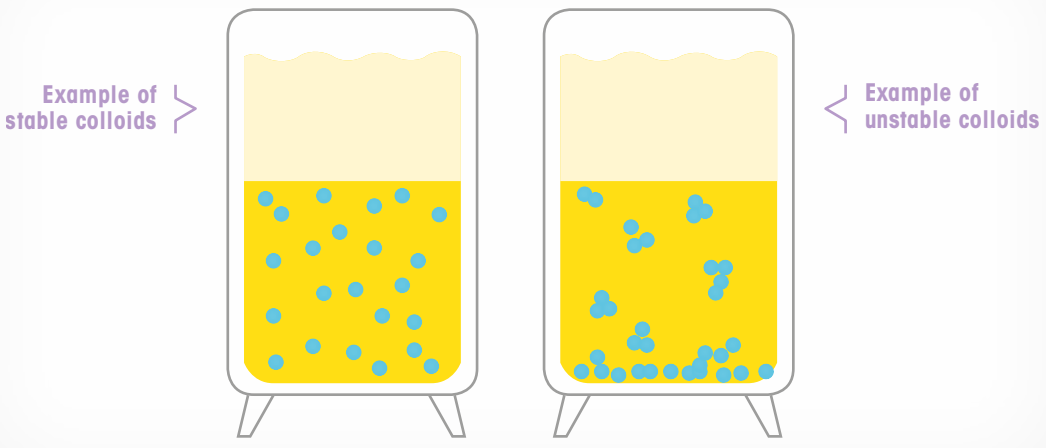
STABILISATION OF WINES AGAINST TARTRATE PRECIPITATIONS

One of the major instabilities in bottled wine is that produced by tartrate salts: potassium bitartrate (THK) and calcium tartrate (TCa). This instability may be explained by poor solubility in wine, increased by low temperatures. Unwelcome with consumers, the presence of crystals in bottles reflects the fact that stabilisation of wines against such precipitations is a critical and vital point, all the more so when making sparkling wines, where there is a risk of racking on the production site or in the consumer's home.

Potassium bitartrate is the monopotassium salt contained in tartaric acid. Its crystals form on the walls of fermentation tanks or maturing barrels. It may be used as a crystallisation catalyser (cream of tartar) during tartrate wine stabilisation by triggering the formation of potassium bitartrate crystals, thereby accelerating the formation and sedimentation of endogenous crystals.

Several subtractive physical methods (lengthy cellaring, continuous stabilisation, ion exchange, electrodialysis, etc.) or additives (carboxymethylcellulose, metatartic acid, mannoproteins, etc.) solve this problem. The diversity of methods gives the producer a wide choice of techniques best suited to his production process and product objectives.

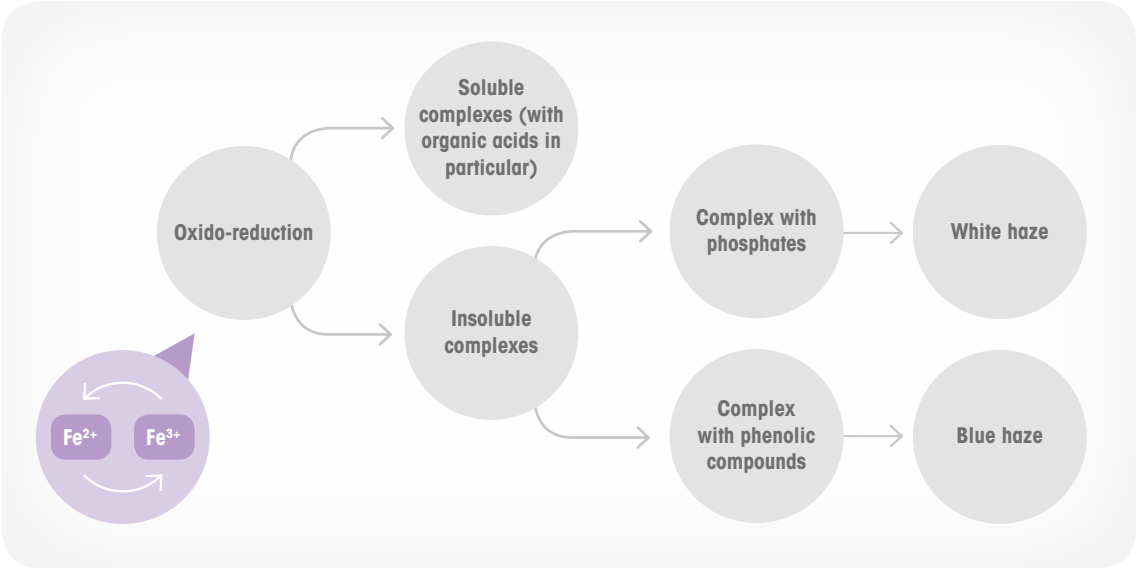
Against this backdrop, **gums arabic** act as a protective colloid. Flocculation of a colloid in wine results from the gradual agglomeration of its particles which, to begin with, are very small and dispersed in the liquid. Initially clear, the wine gradually becomes cloudy until particles reach a size which is sufficient to precipitate them to the bottom of the recipient. The method proposed after adding gum arabic is to prevent the first nuclei of potassium bitartrate from increasing in size, thereby preserving the complexes in a «dissolved» form.



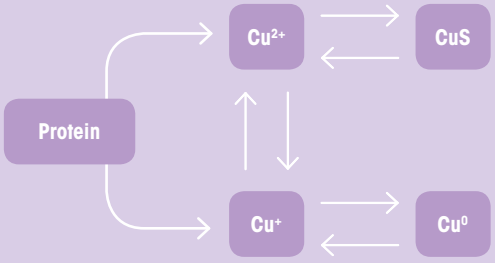
STABILISATION OF WINES AGAINST METAL HAZE

Besides being present in oxido-reductive phenomena, iron and copper can cause cloudiness and haze, which can make the product unmarketable.

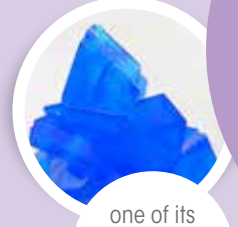
Ferric haze is also known as blue haze when caused by precipitation of iron with tannins and anthocyanins in red wines, or white haze (precipitation with phosphates) in the case of white wines (but which can also be present in red wines). It is due to insolubility of iron complexes in a ferric state (bivalent iron is not known to form insoluble products in wines).
These forms of haze are caused by an excess of iron in wine (sometimes a total of more than 10 mg/L of iron). The mechanism is complex since the haze is not just related to iron content in wine but also to its pH and the way the wine has reacted to oxygen.



Cupric haze is an accident which occurs in white or rosé wines due to a lack of oxygen in bottles associated with the presence of copper, often above 0.5mg/L of copper in total. Colour varies, going from brown to red. Associated with the presence of metal copper, the red colour is often the result of an excess of SO2 (reductive conditions). This defect is generally accompanied by protein haze responsible for flocculation of the complex. Depending on the state of oxido-reduction, proteins can directly contribute to complexing copper salts via free –SH groupings.
The causes of such haze are clearly complex and multiple; high temperatures or exposing white wines to light also contribute to this defect. To sum up, this haze suggests that it is caused or not by oxido-reductive conditions.



Using **gums arabic** counters precipitations of unstable copper salt complexes since they act as a protective colloid, i.e. they prevent particles from agglomerating to the point where they flocculate the complexes. To our knowledge, the intimate mechanisms of this gum arabic protection are not described.



one of its salts (copper sulphate): Cu^{2+}

metal Copper (Cu)

STABILISATION OF WINES AGAINST COLOURING MATERIAL

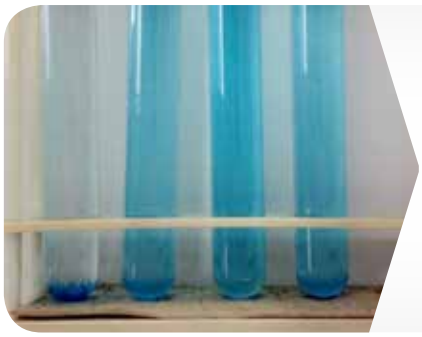
The red colour of wines is mainly due to anthocyanins, molecules that are positively charged at the pH of wine.

Colour stability is the result of a complex combination between these anthocyanins and tannins (complexes -covalent or not- with the presence of polysaccharides or even proteins).

As in any balanced reaction, this can be modified by external elements (cold, aeration and time).

Gums arabic are one of the tools which help colouring material stabilise efficiently.

Although mechanisms are not clearly understood, it is accepted that gums arabic –by their hydrophilic and complexing PROPERTIES with regard to tannins– are highly efficient in leaving tannin & anthocyanin complexes in a metastable state.



In this example, the presence of colour in solution shows the efficacy of Inogum in countering colour precipitation (from the 2nd tube from the left, i.e. with a dose of 15mg/L, the colour is visible in all the tube).

EFFICACY TEST

Untreated control (precipitation of the «colour») followed by INOGUM MF at 15, 30 & 50 mg/L

STABILISATION OF BUBBLES

Due to their viscosity, gums arabic are recommended to enhance sparkle consistency in the glass, finesse and persistence of bubbles by slowing down the draining of the film which separates the bubbles.

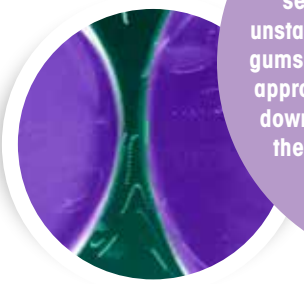
Some gums arabic are known to contain surface-active molecules in the form of **protein fractions**. Consequently, these proteins can directly contribute towards stabilising bubbles.

From another angle, the polysaccharide fractions of **gums arabic** are capable of bonding with proteins at bubble interfaces.

The gum's polysaccharides enhance the stability of the film which separates the bubbles through viscosity, thereby slowing down the draining and future bursting of the bubbles.

Consequently, the combination of proteins at wine/gas interfaces and polysaccharides within the film extends bubble life.

Gum arabics will increase bubble finesse at the surface (collar) while enhancing stability over time.



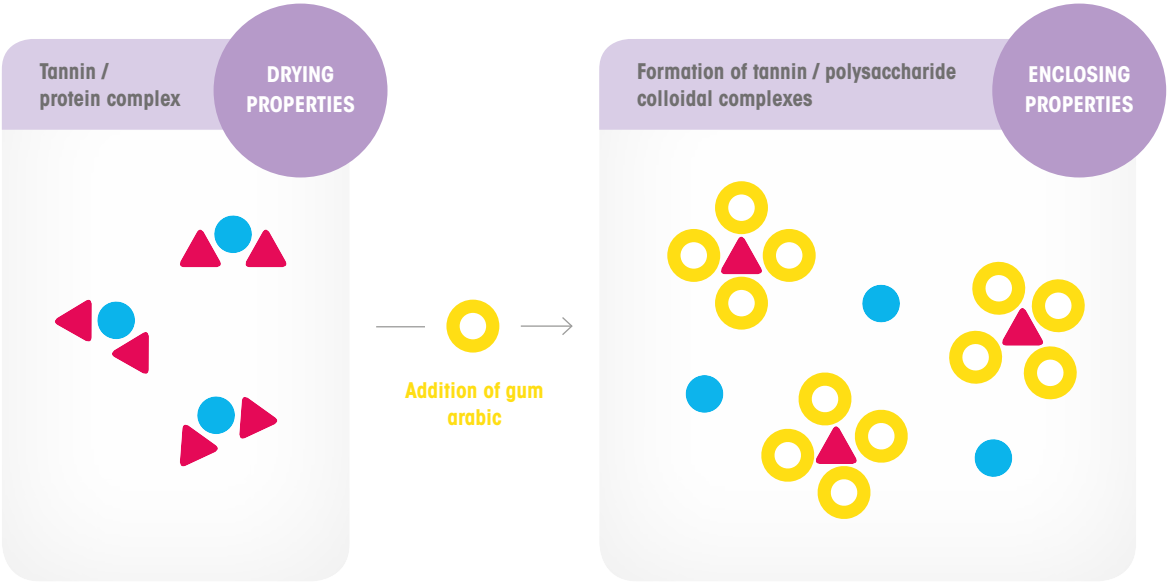
The 2 bubbles only coalesce if the film separating them is fine and unstable. The size and structure of gums arabic prevent bubbles from approaching each other and slow down draining, thereby reducing the probability of the bubbles bursting.

ENCLOSING PROPERTIES OF GUM ARABIC

In addition to its protective role, the positive effect of gums arabic on the organoleptic qualities of wine has been shown at several tastings. Enclosing gums arabic have the property of enhancing the sensation of roundness and reducing astringency.

Astringency designates the perception of dryness, roughness and harshness on the palate. This impression is the direct result of condensed tannins of wine which react with proteins of saliva. Astringency provokes a tightening of the tissues and a reduction of secretions.

The presence of polysaccharides in the structure of gums arabic limits the formation of insoluble tannin-protein complexes because they have a great affinity for tannins which they can encapsulate to dissociate tannin-protein complexes or prevent them from forming.



As a result of their great affinity for tannins, gum arabic polysaccharides will enclose tannins, thereby reducing the perception of dryness and roughness and providing roundness and unctuousness on the palate.

Protein Tannins Gum arabic

STABILISING GUMS ARABIC

FLASHGUM

This instantly-dissolving gum arabic which comes from the Verek (or Kordofan) acacia is the most protective agent for colloidal solutions.

FLASHGUM is used as preventive treatment for:
- precipitation of colouring materials,
- ferric and cupric metal hazes,
- tartrate precipitation by boosting METATARTARIC ACID.

The porous structure of FLASHGUM particles provides immediate dissolution in wine.

GUM ARABIC SD

This is a solution of gum arabic, purified and specially selected for sparkling wines, which comes from the Verek acacia well-known for having rich protein fractions and its superior protective capacity.

GOMME ARABIQUE SD inhibits aggregation of unstable colloids responsible for cloudiness and deposits after disgorging sparkling wines, particularly rosés.

It is used in preventive treatment for its ability to:
- oppose flocculation of unstable colouring material in red wines,
- boost the action of METATARTARIC ACID against tartrate precipitation,
- prevent metal hazes by avoiding flocculation of cupric/ ferric complexes.

In addition, GOMME ARABIQUE SD has been selected for its surface-active properties which enhance bubble stabilisation.

INOGUM

INOGUM preparations are gum arabic solutions, selected and purified, from Verek acacia, well-known for having rich protein fractions and consequently its superior protective capacity.

INOGUM:
- inhibits the aggregation of unstable colloids responsible for cloudiness and deposits in the bottle,
- opposes flocculation of unstable colouring material in red wines,
- boosts the action of METATARTARIC ACID against tartrate precipitation,
- prevents metal hazes by avoiding flocculation of cupric/ ferric complexes.

INOGUM MF

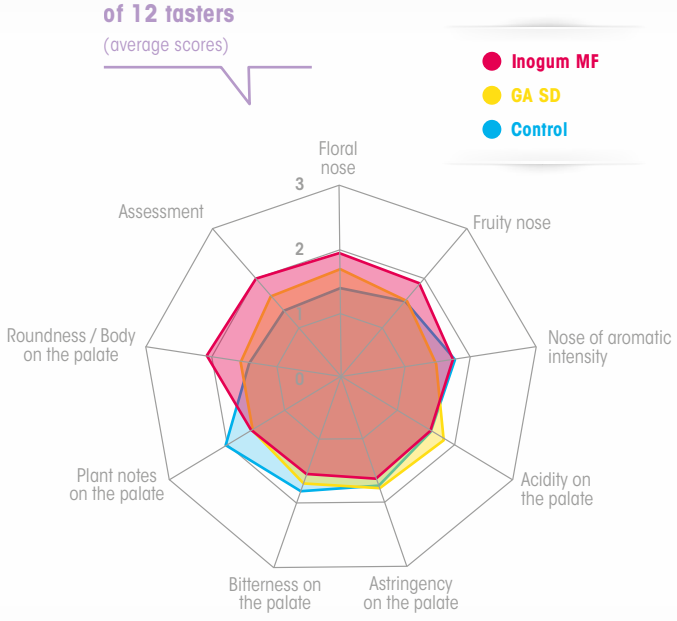
A solution of gum arabic from the Senegalese acacia compatible with microfiltration.

INOGUM MF is obtained from a single production, compatible with microfiltration, acting as a protective colloid against colour and with good structuring capacity.

INOGUM MF :
- is adapted to microfiltration
- acts as a protective colloid against unstable particles
- stabilises colour
- provides structure, body and sweetness.

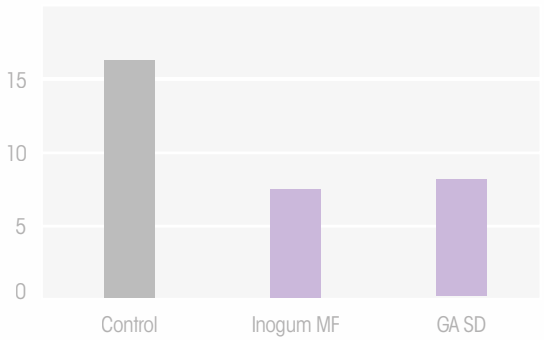
Results of a sensory analysis of 12 tasters

(average scores)



Differences in turbidity in red wines (Gamay)

(turbidity of the sample at 4°C – turbidity of the sample at ambient temperature)



ENCLOSING GUMS ARABIC

FLASHGUM R

FLASHGUM R is an instantly-dissolving gum arabic from Seyal-type acacia.

Its polysaccharides reduce astringency by softening tannins that are somewhat dry and increase the impression of body, roundness and pleasure on the palate.

FLASHGUM R is also used as a protective colloid to stabilise phenolic compounds.

When making sparkling wine, FLASHGUM R can be added to wines prior to tirage.

FLASHGUM R MF

FLASHGUM R MF is a gum arabic from Seyal-type acacia, specifically formulated for microfiltration.

Rich in natural polysaccharides, this high-quality gum arabic is selected for its stabilising and organoleptic properties.

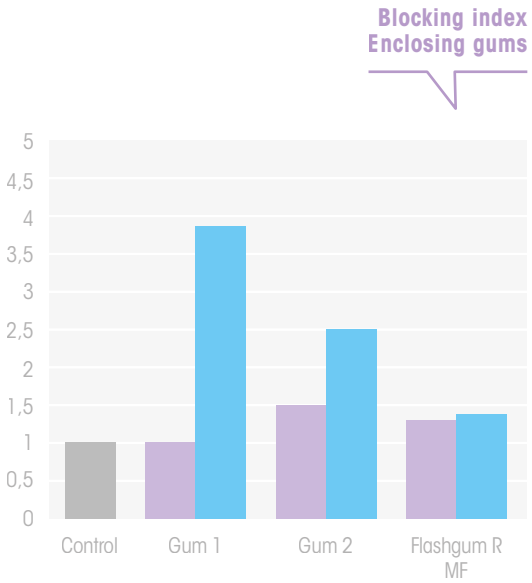
The FLASHGUM R MF production process guarantees excellent filterability in the solution.

FLASHGUM R MF thus minimizes the impact of the addition of gum arabic on the filterability of wine and blocking of filters.

FLASHGUM R MF reduces astringency and increases the impression of body and roundness on the palate.

FLASHGUM R MF is also used as a protective colloid to stabilise phenolic compounds.

Gums arabic protect the colour of wines by reducing the formation of cloudiness and precipitation of colouring material.



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