

Gellangel

Ingredients

Gellan gum – E418

Culinary data

Gellangel is a gelling agent.

It enables:

- to obtain gelled preparations with a firm and transparent texture and a clear cut,
- to make gels served hot (up to 90°C),
- to gel preparations that gelatin can't gel such as pineapple, kiwi or papaya,
- to put particles in suspension,...

Technological data

Dissolution

The preparation of a gel starts with the dissolution of the Gellangel powder in water. This is obtained only if water is heated above 90°C. To improve the solubility of the Gellangel, it is recommended to disperse it in cold water, before heating the mixture.

The amount usually used ranges from 0.1 to 1g for 100g of final preparation.

Gel setting

The gel sets when the preparation is cooled down to temperatures close to 30°C. The formed gels withstand to temperatures up to 90°C and melt above. The gels set again as the temperature is decreased again to temperatures close to 30°C. Gellangel needs cations presence (calcium, sodium, potassium...) to make a gel. Water, particularly tap water, contains enough of compounds to make a gel. The gel setting is fast. It's advised to let the preparation gel at room temperature. When the preparation is placed in the fridge, the gel becomes more brittle and less soft.

Acidity and sugar influence

Gellangel is sensitive to acidity and high sugar concentrations. It is advised to add the acidic or sugar ingredients after heating.



Influence of ions

Sodium or calcium ions presence can interfere with Gellangel hydration. Using molecules (like sodium citrate) which trap calcium or sodium ions can be a solution. The lumps formation caused by a too fast gel setting process is reduced. If it's required to add ions (salt...) into the preparation, it's advised to add it into the hot preparation.

Sensory properties

Gels are firm, translucent and bright. Gels have a neutral taste and give an excellent flavors release guaranteeing a very good aromatic perception.

Preservation

Gels made of Gellangel don't toughen with aging.

Freezing

Freezing weakens gels made of Gellangel.

Storage

Store in a closed hermetic packaging, in a cool and dry place.

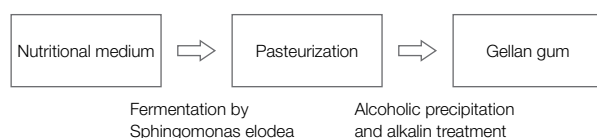
Toxicological data

- The used quantity shouldn't exceed the concentrations used to obtain the desired effect
- No acceptable daily intake level.

Scientific data

Origin

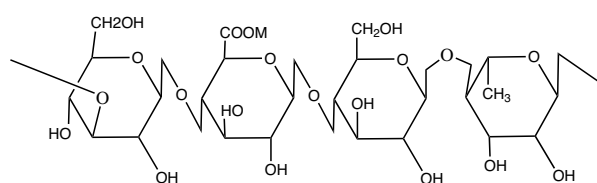
Gellan gum is naturally produced by aerobic fermentation of bacterial strain named *Sphingomonas elodea*. Those bacteria naturally grow on an aquatic plant widely distributed in nature: Elodea. In nature, the gellan, as a gel, could be an extracellular protection which can protect the organism against drought. This production can be made by an industrial process via fermentation.



*Gellan gum production
by Sphingomonas elodea fermentation*

Chemical composition

Gellan gum belongs to a family of polymers (long molecules made by attaching one after the other a large number from one or several small molecules) made of carbohydrates (i.e. sugars in chemistry's words, with a meaning not restricted to table sugar). Two different forms exist that can be distinguished by their chemical structure and different properties.



Gellan gum

Gellan gum forms gels when the polymers they are made of wrap one around the other in the presence of ions (calcium...). A tri-dimensional network is formed that traps a very large amount of water.

History

Gellan gum has been synthesized for the first time in 1978. Japan has been the first country to approve the use of gellan gum in human food in 1988. It's authorized in Europe since 1995.

Informations extracted from:

- Stanley N. F. **1990**. *Food Gels*. P. Harris, Elsevier, 79-119.
- Gabriel, J.P. **2009**. *La Cuisine contemporaine – Les Essentiels*. Unilever Food Solutions, 80-81.