

Quartely Problem

- Science Edition -

Gelatine, Pectin or Agar-Agar?



"Animal, veggi or vegan?" is a question that is also being asked about fruit gums. "Classic" gummy bears contain gelatine. Agar-agar is often used as a counter term to gelatine. However, more often pectins are used for the production of vegan fruit gums.

All three gelling agents mentioned are first heated in a liquid to dissolve them. Cooling causes the solution to solidify (partially). Reheating can reverse this process. On the whole, the use of all three gelling agents gives similar results, indicating the presence of similar structures.

- Research what gelatin, agar-agar, and pectin can each be made from.
- Find out what the general, molecular structure of the gelling agents is!

In addition to the similarities, there are also differences, for example, in the melting behavior. You can do an experiment on this:

Heat one vegan (i.e. pectin-containing) and one gelatin-containing fruit gum carefully (it should not caramelize) on a spoon over a candle and observe the melting behavior in each case. Note down your observations.

Brainstorm Box

The gelling mechanism is different for gelatine and pektin. Find out more about this and then try to find an explanation for your observations in the melting experiment!



DIY fruit jellies

Making fruit gums is not difficult at all! With simple means they can be made in the kitchen. However, please ask your parents in advance (also for the melting experiment)!

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Birth of Gummy Bears



→ The recipe described here is a simple variant but you should still only try it in the presence of a parent! If you work directly on the stove, the sugar solution can easily burn (stinks terribly!) and become very hot (risk of burns!).

First, look for something you can use as a mold for the gummy bears, for example the plastic inside of a chocolate advent calendar. You can also simply pour the mass on a plastic base and then cut.

Ingredients: 15 g edible gelatine (powder), 35 ml water, 30 ml fruit syrup (containing sugar, not for soda fizzers), 20 g sugar, 10 g honey (liquid if possible), 3 g citric acid

Mix 25 ml of water with the gelatine and let it swell for 15 minutes. Mix the sugar and citric acid with the remaining 10 ml of water and heat the mixture in a water bath until the sugar and acid are dissolved. Now heat the swollen gelatine until it has melted. The sugar solution, fruit syrup and honey are stirred into the gelatin; the recipe is left to cool for a few minutes, the foam on the surface can be skimmed off with a spoon. Then fill the solution into the molds, e.g. with a syringe or a pipette, and let it harden for several hours. The resulting fruit gums may be sticky. If you want "sour" gummies, you can now sprinkle them with a mixture of sugar and citric acid. Caution: Pure citric acid is much too acidic. If you want to pack the fruit gums in bags or jars, you can turn them in cornstarch, this reduces sticking together.

Bon appetit!

Tips: Gelatin can also be replaced by vegetable gelling agents. For this, follow the instructions on the respective products. All steps can also be done directly on the stove instead of in a water bath. Here, however, you must be very careful that nothing burns.

Notes for Pros:

This recipe is a very simple version. For advanced experimental cooks, there are recipes in which an invert sugar solution is made first. Why do this?