

Sensory Effects of Galactomannans in Fruit Products like Fruit Soup and Kräm.

October 2009

1. Introduction

In fruit products, galactomannans are often used in combination with other hydrocolloids to create the viscosity and texture required. In an aqueous solution, the galactomannans show different sensory effects. Also in fruit products, these effects will appear and would influence the customer's acceptance of the final product.

2. Sensory Effects in Fruit Soup / Fruksoppa and Kräm

Fruksoppa and Kräm are traditional fruit products in Scandinavia. The hydrocolloids used for these creamy and full-bodied products are mostly modified starch and guar gum in combination. We developed a start-point recipe for each type of galactomannan. Therefore we added the required quantity of every single galactomannan to a constant concentration of hydroxypropyl starch (E 1442).

The influence of the following galactomannans was analysed:

| | | |
|--------------------------------|----------------|-------------------------------|
| Locust Bean Gum | VIDOGUM L 175 | |
| Tara Gum | VIDOGUM SP 175 | |
| Native Guar Gum, bland flavour | VIDOGUM GH 175 | |
| Thermally degraded Guar Gum | VIDOCREM E | 1,400 – 1,600 mPa.s Viscosity |
| Thermally degraded Guar Gum | VIDOCREM B | 90 - 150 mPa.s Viscosity |

These tests were carried out on a laboratory scale.

3. Experiment

3.1 Basic Recipes

| | | |
|-----------------------------------|-----------------|-------------|
| Apple Juice Concentrate (71°Brix) | 10.00 % | |
| Saccharose | 10.00 % | |
| modified Starch (E 1442) | 2.50 % | C*Tex Polar |
| <u>06718 Galactomannan</u> | x % | |
| Citric Acid | 0.25 % | |
| Ascorbic Acid | 0.01 % | |
| Water | approx. 75.50 % | |

3.2. Preparation

Pre-mix all the dry components.

Add the dry pre-mix to the water and the apple juice concentrate while stirring.

Heat to 88°C (190 °Fahrenheit) during 10 minutes.

Cool to 20°C.

Fill into jars at 4°C (39° Fahrenheit).

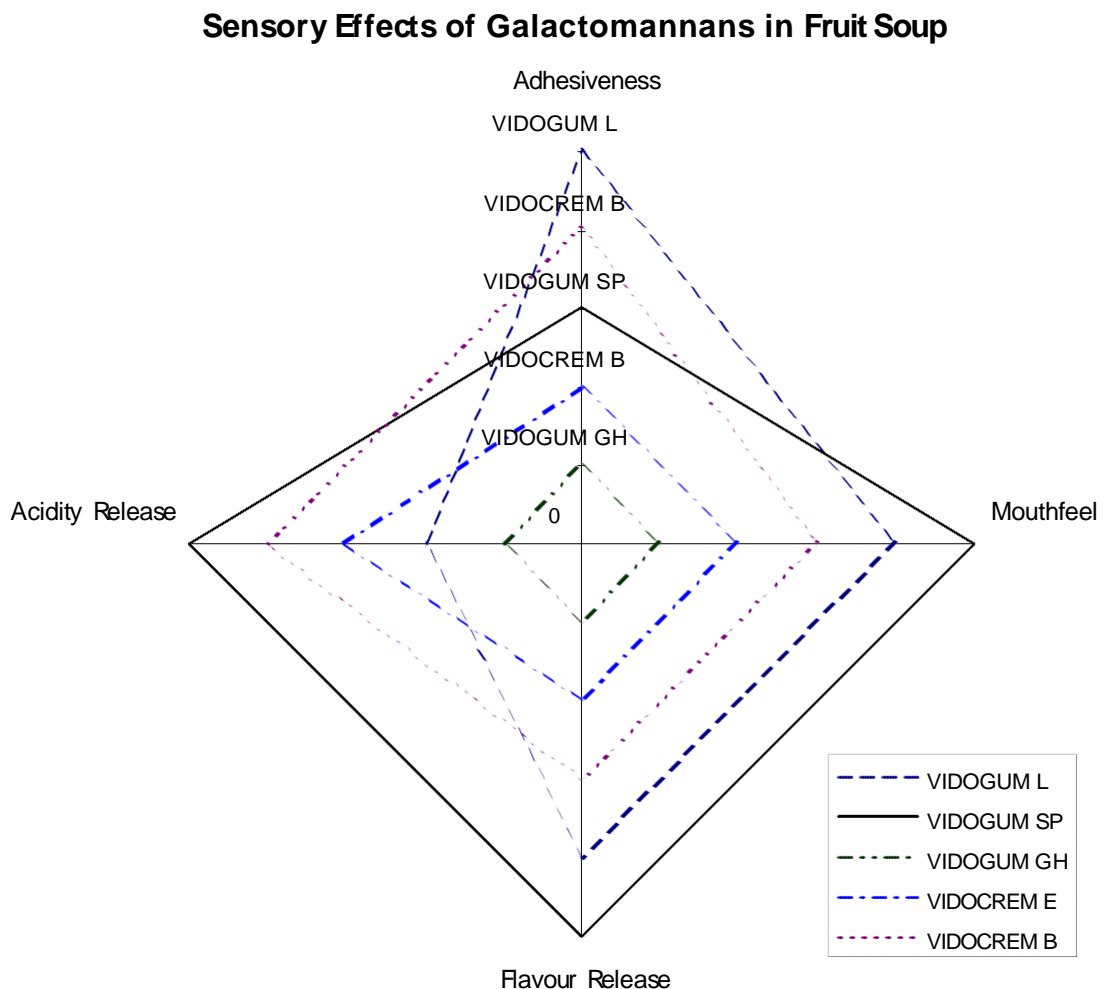
3.3. Trials

| Galactomannan | % | % | % | % | % |
|-----------------------|------|------|------|------|------|
| | | | | | |
| VIDOGUM L 175 | 0.50 | | | | |
| VIDOGUM SP 175 | | 0.50 | | | |
| VIDOGUM GH 175 | | | 0.50 | | |
| VIDOCREM E | | | | 0.55 | |
| VIDOCREM B | | | | | 0.70 |

4. Results

A panel degustated the fruit soups products concerning the sensory sensation. The ranking included the following aspects:

- Mouthfeel / Creaminess
- Adhesiveness
- Flavour Release
- Acidity Release / Fruitiness



The panel did not compare the laboratory samples with any commercial market samples. The samples were degustated altogether and a ranking was established for every single aspect. In the above graphic, the favourite recipe is No. 3 (VIDO GUM SP).

5. Discussion

The influence of the mouthfeel / creaminess by the various galactomannans have been extensively described [see also the UNIPEKTIN - Documentation (technical properties, chapter 2)].

In comparison to native guar gum, the thermally degraded guar gum types (VIDOCREM) show significantly better rheological properties. On the other hand, it is interesting to see that tara gum (VIDOGUM SP) was better ranked than locust bean gum (VIDOGUM L). But this confirms why a blend including locust bean gum usually is more often used in practice than a pure locust bean gum.

The evaluation of the adhesiveness shows a clearly better ranking of the locust bean gum compared to the other galactomannans.

Today, the flavour release is a very important factor in the research and development of food products. In order to distinguish the freshness and the flavour release, we ranked the product in the aspect of acidity release and flavour release. There was a clear difference between the recipe with native guar gum showing a non-fresh sensation and the recipe with tara gum showing a much better freshness.

Generally, the very good results of tara gum (VIDOGUM SP) promotes this galactomannan for a wide range of products in the food industry.