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V. Anantha Jothi and M. Selvi

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Short Communication

Studies on Quality Assessment of Different Thickening Agents of Jelly

V. Anantha Jothi*[1] and M. Selvi[2]

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***Key words*:** Alginic acid, Gelatine, Pharmaceutical, Sodium alginate, Polymers, Polysaccharide

Thickening agents are very important ingredients in the food industries and pharmaceutical industries. 99% of synthetic agents were used globally. Algin is a high molecular weight polymer. The chemical structure of alginic acid differs only slightly from that of oxycellulose. At low pH hydration of alginic acid leads to the formation of a high viscosity acid gel. It is established among the most versatile biopolymers used in wide ranges. Gelatin is commonly utilized as a gelling agent and also as food additives, drugs, cosmetics, paints and foam stabilizers. by the standard procedure given by-Ref: Add et al, year.

Morphological identification was done with the help of Macro and microscopic observation. These were correlated with standard illustrations described in various monographs by reputed algologist Boergesen [1] contributions to a South Indian marine algalflora sensu Fritsch [2]. The structure and reproduction of the algae of the Extraction of alginic acid follow objectives:

The present study Focused with the jelly and its standardization of different thickening agents [3].

Extraction of Algin Magdalena Beata Labowska *et al*. [4], extraction of carrageenan from *Gracilaria edulis* Machmudah *et al*. [5] processed agar shred purchased from super market. (China grass, Nasreena star, HM Food products).

Morphological studies of plants

Sampling plants of *Gracilaria edulis* and *saragassum wightii* were identified by following standard descriptions given in monographs [1-2], [6].

For the determination of melting point of jelly prepared from agar shred. The agar shred should be soaked in the water (10-15). Then the different thickening agents like gelatine, algin, sodium alginate were added to the agar shred like (1%, 2%,3%, 4%, 5%). The temperature is 80 °C calculate the different melting time. For the determination of melting point of jelly prepared from fresh *Gracilaria edulis*. The jelly is prepared and then and different thickening agents like gelatine, algin, and sodium alginate were added to the jelly like different concentrations. The optimum temperature is 80 °C the calculation should be calculated.

Fig 1 *Gracilaria edulis* S. G Gmelin (1952) *Sargassum wightii* Greville (1848)

Table 1 Determination of melting point of jelly prepared from agar shred and fresh *Gracilaria edulis*

Sample	Jelly from Agar shred		Jelly from *Gracilaria edulis*	
	Temp °C	Time (minutes)	Temp °C	Time (minutes)
Gelatin (G-1%)	80	5	90	2
Gelatin (G-2%)	80	10	90	4
Gelatin (G-3%)	80	15	90	6
Gelatin (G-4%)	80	20	90	8
Algin (1%)	80	3	90	1
Algin (2%)	80	6	90	3
Algin (3%)	80	9	90	5
Algin (4%)	80	13	90	7
Sod alginate (1%)	80	4	90	4
Sod alginate (2%)	80	8	90	8
Sod alginate (3%)	80	12	90	10
Sod alginate (4%)	80	16	90	12

* **V. Anantha Jothi**
✉ vajothi1993@gmail.com

[1-2] PG and Research Department of Botany, Sri Parasakthi College for Women (Autonomous), (Affiliated under Manonmaniam Sundaranar University, Tirunelveli), Courtallam - 627 802, Tamil Nadu, India

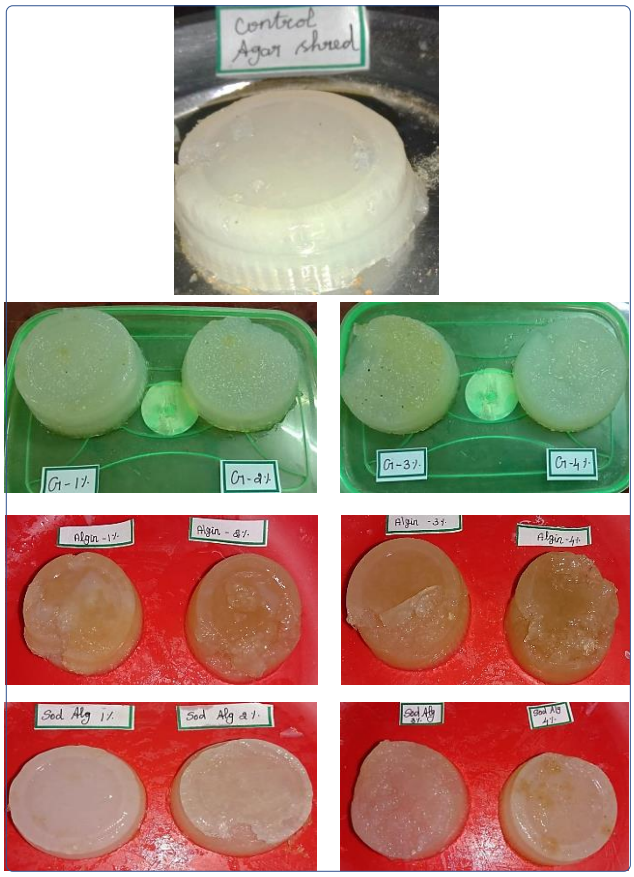

Plate 1 Agar shred treated with different percentage of thickening agents

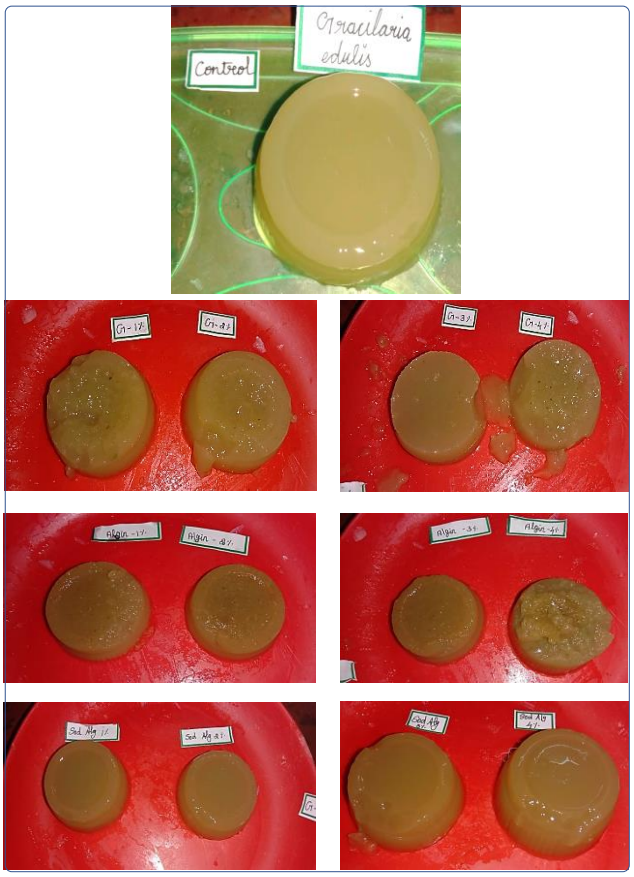

Plate 2 fresh *Gracilaria edulis* treated with different thickening agents

In present study (Table 1) shows the melting point of jelly from agar. The time variation also varied for different thickening agents, like gelatine, algin, sodium alginate, and the synthetic agent enhance the thickening property faster than natural. Agar sample prepared with different concentration of Inulin syrup to replace sucrose: 0%, 20%, 40%, 60%, 80% and 100% [7]. The higher concentration of inulin syrup is added at temperature of 65 °C, but in opposite situation observed in the gel sample is prepared at a temperature of 105 °C. The melting point of jelly from *G. edulis* shows (Table 2) the time variation observed from 2-12 minutes for natural agent (*G. edulis*) and 5-20 minutes for synthetic and purified chemical agent. In (Table 1) different concentrations of thickening agents like gelatin, algin, and sodium alginate was prepared in the concentrations (1%, 2%, 3%, 4%). And then it is treated with shred in the temperature 80 °C and the melting point of shred also noted. Then the thickening agents are treated with *Gracilaria edulis* and the temperature was 90 °C and melting point also noted.

In (Plate 1) agar shred treated with different thickening agents. Control is pure agar shred. The agar shred added with (1-4%) concentrations of gelatin, algin and sodium alginate and photographs also attached. In (Plate 2) Fresh *Gracilaria edulis* added with (1-4%) concentrations of gelatin, algin and sodium alginate and photographs also attached.

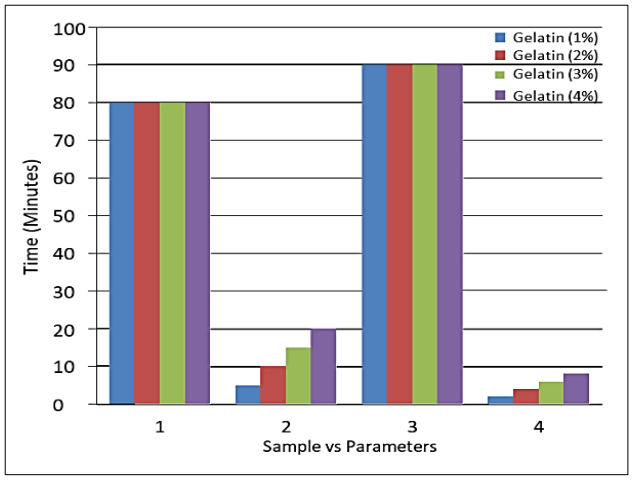

Fig 1 Difference of melting time observed in gelatin a synthetic thickening agent

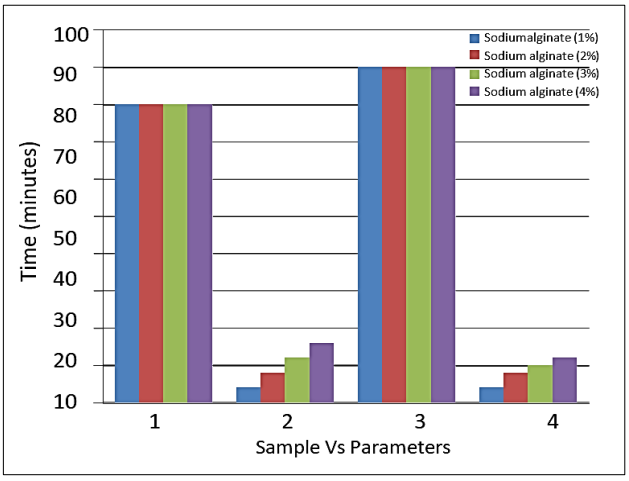

Fig 2 Difference of melting time observed in Sodium alginate Processed chemical

In (Fig 1) difference of melting time observed in Gelatin as synthetic agent. Here 90 minutes shows the highest time variation (3%) and 0-10 minutes shows lowest melting tine (4%). In (Fig 2) difference of melting time observed in sodium alginate processed chemical. Here 90 minutes shows the highest melting time variation (3%) and 0-10 minutes shows

lowest melting time (4%). In (Fig-3) difference of melting time observed in organic thickening agent algin 90 minutes (3%) shows highest melting point and 0-10 minutes of (4%) shows lowest melting point. Aggregation of polysaccharide matrix strengthened by gelling property which was confirmed in the present result of 20 minutes time taken for melting of polysaccharides.

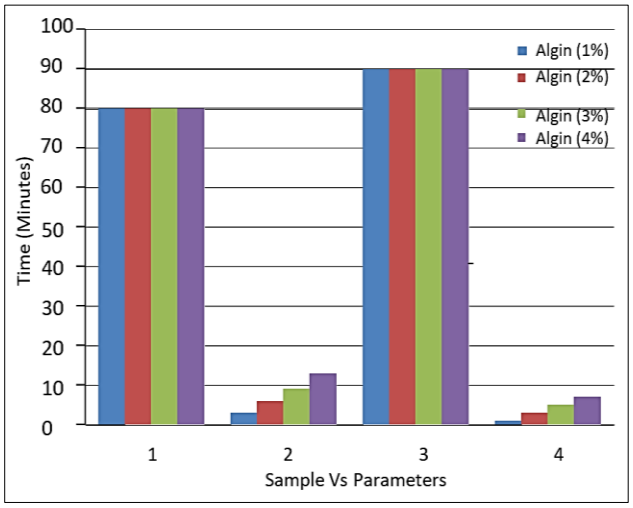

Fig 3 Difference of melting time observed in organic thickening agent: Algin

In fig (1-2), 2 & 4% of sodium alginate and algin showed quick thickening time 10 minutes observed. Hence 4% was found as ideal concentration for jelly thickening [8-9].

As the time of melting point increases the concentration of (4%) thickening agent decreases it reflect the aggregation of polysaccharide molecules in carrageenan and agar agar. Among the 3 thickening agents 4% (20 minutes) gelatin shows high level melting point and 1% (5 minutes) gelatin shows low melting point. 4% (13 minutes) algin shows high level melting point and 1% (3 minutes) algin shows low melting point. 4% (16 minutes) sodium alginate shows high level melting point and 1% (4 minutes) sodium alginate low melting point [10-11].

SUMMARY

Alginic acid is a non-agricultural, non-synthetic substance as allowed as an ingredient or on processed products labelled as “organic” or made with organic. Alginic acid is derived from brown seaweeds and is extracted primarily through different treatments. Gelatin is a nutritious protein that finds applications as an ingredient in the food, pharmaceutical and photographic industries. Gelatin derived from pig skin is normally referred to as type-A gelatin and gelatin derived from beef skin is referred to as type-B gelatine. Sodium alginate is a cell wall component of marine brown algae and contains approximately 30-60% alginic acid. The conversion of alginic acid to sodium alginate allows its solubility in water, which assists its extraction. The polymers closely resemble alginic acid, a seaweed polysaccharide as shown by composition and alginate digestion. Thickening property of various agents like gelatine alginate and natural colloidal agents (*G. edulis*) were checked Synthetic (purified) agents enhances the thickening property faster than natural one. Time variation observed from 2-12minutes for natural agent (*G. edulis*) and 5-20 minutes for synthetic and purified chemical agents. Food thickening agents are widely used to modify rheological and textural properties as well as to enhance the quality attributes. Improvement in moisture bunding capacity, structural modification and altering flow behaviour properties are the major functions of food thickeners. Factors such as temperature shear. pH ionic strength etc. have effect on the functionally of these thickening agents and must be carefully optimized by food processor while formulation. The manufactures use various thickeners in the form of starch gum. Xanthum gum, gum Arabic guar gum, and carboxyl methyl cellulose to improve the consistency of food.

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