
Transglutaminase for yoghurt

Activa-YG

AJINOMOTO FOODS DEUTSCHLAND GMBH

April 2004

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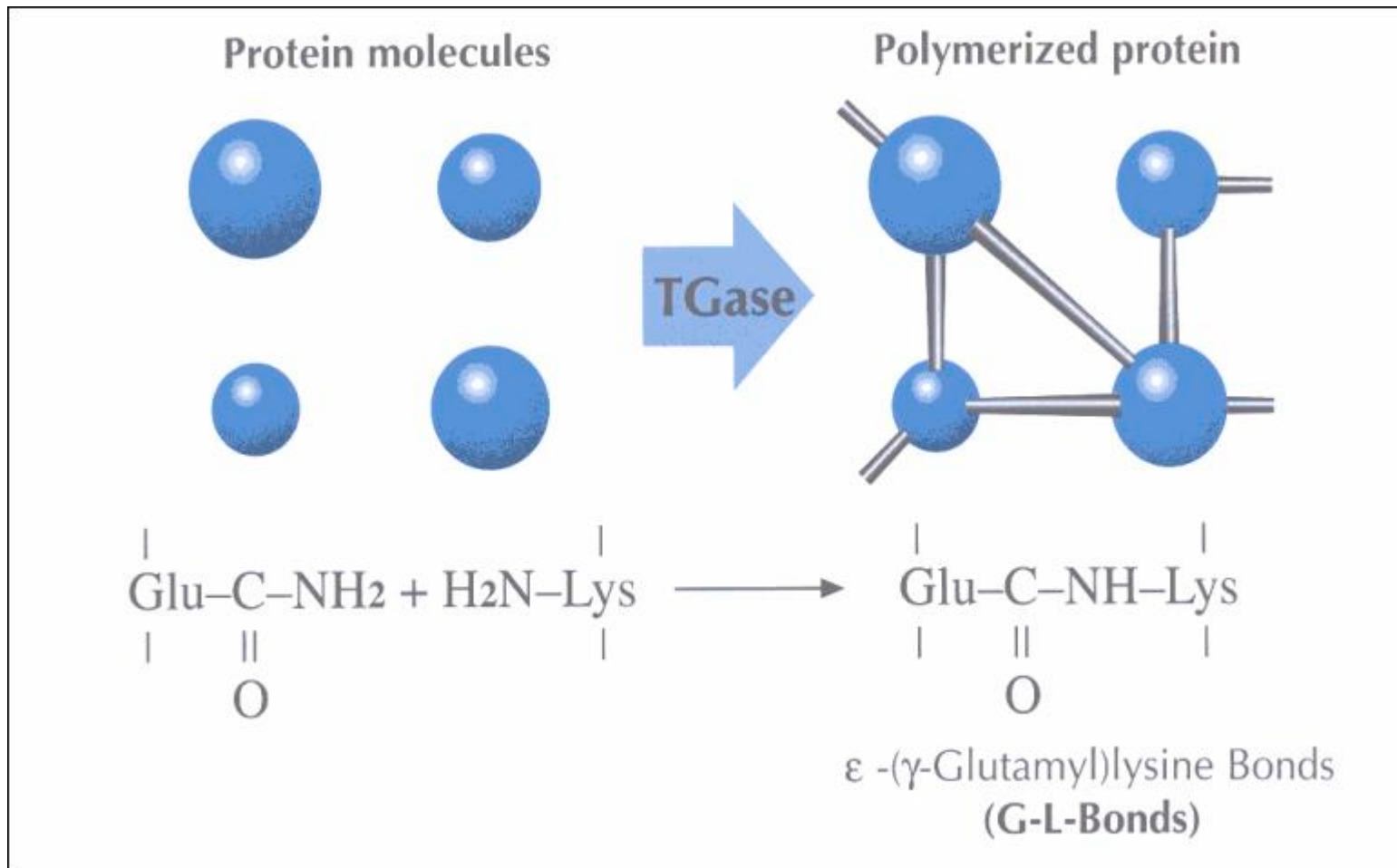
Content

- ***Basic properties of TG***
- ***Background of development***
- ***Comparison MP and YG***

Basic properties of TG

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TG:Cross-linking Reaction



Benefits TG brings to yogurt (set)

- **Increased gel strength**
- **Reduced syneresis**
- **Smooth, dry surface**
- **Reduction/
elimination of added dry matter**

Benefits TG brings to yogurt (stirred)

- **Increased viscosity**
- **Improved creaminess**
- **Reduced syneresis**
- **Reduction of added dry matter
and/or stabilizers**

TG preparation – "ACTIVA" MP

Formulation

Transglutaminase, Maltodextrin, Lactose

TG activity

100 Units/g Preparation

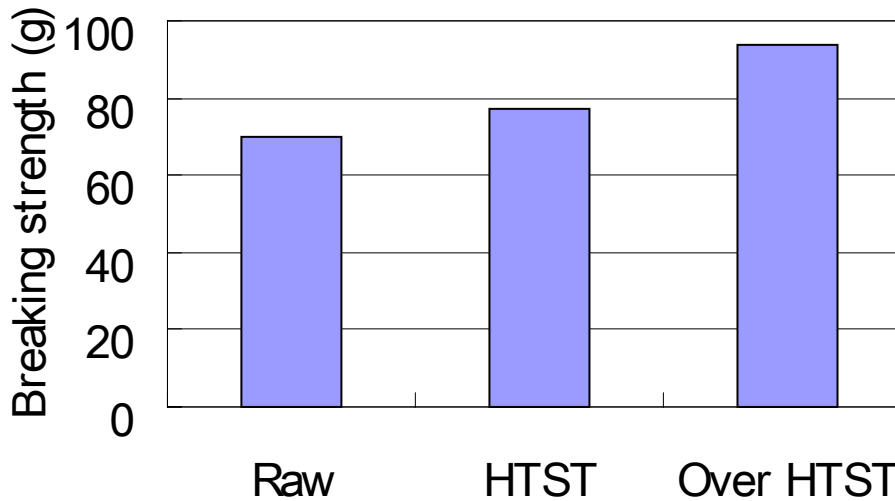
> Good solubility in milk

***Background of
development***

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Preheating condition

Gel strength of set-type yoghurt



yogurt mix (contain raw milk)



Preheating



Addition of Activa-MP

0.04%

Reaction for 20hrs at 10°



Heating for 6 min at 90°



Fermentation

Raw

no preheating

HTST

Preheating raw milk at 74° for 15sec.

Over HTST

Preheating raw milk at 80° for 15sec

Activa-MPs effect is different with preheating temperature of milk.

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Treatment of thiol-reducer

We confirmed that ...

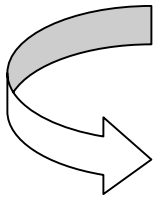
TG activity of "ACTIVA" MP is not fully utilized under fresh or Pasteurised milk

➤ Treatment of thiol-reducer is effective to recover TG activity

Report from TNO

TNO reported..

- Milk contains inhibitor against TG
- Activity of inhibitor disappears by heat treatment



- The inhibitor deteriorate effect of TG in yoghurt.
- Preheating of milk makes the inhibitor inactive.
- Reducer interacts with inhibitor,
and TG activity is recovered

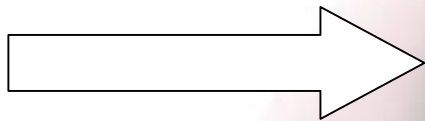
Development of "New" TG preparation

Concept

- TG can show high activity in fresh milk
TG + Yeast Extract (as reducing agent)

Formulation 100 Units/g Preparation

Transglutaminase, Yeast extract, Maltodextrin,
Lactose, Vegetable oil



"ACTIVA" YG for yogurt

*applying for Patent

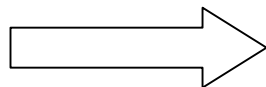
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Comparison between MP and YG

~ Whole milk yogurt (2% fat) ~

Contents	Control	MP 1u/g-p	YG 1u/g-p	YG 0.6u/g-p	YG 0.3u/g-p
Pasteurized whole milk (74°,15sec)	95	95	95	95	95
Skim milk powder	0.5	0.5	0.5	0.5	0.5
Activa MP	-	0.0346	-	-	-
Activa YG	-	-	0.0346	0.0208	0.0104

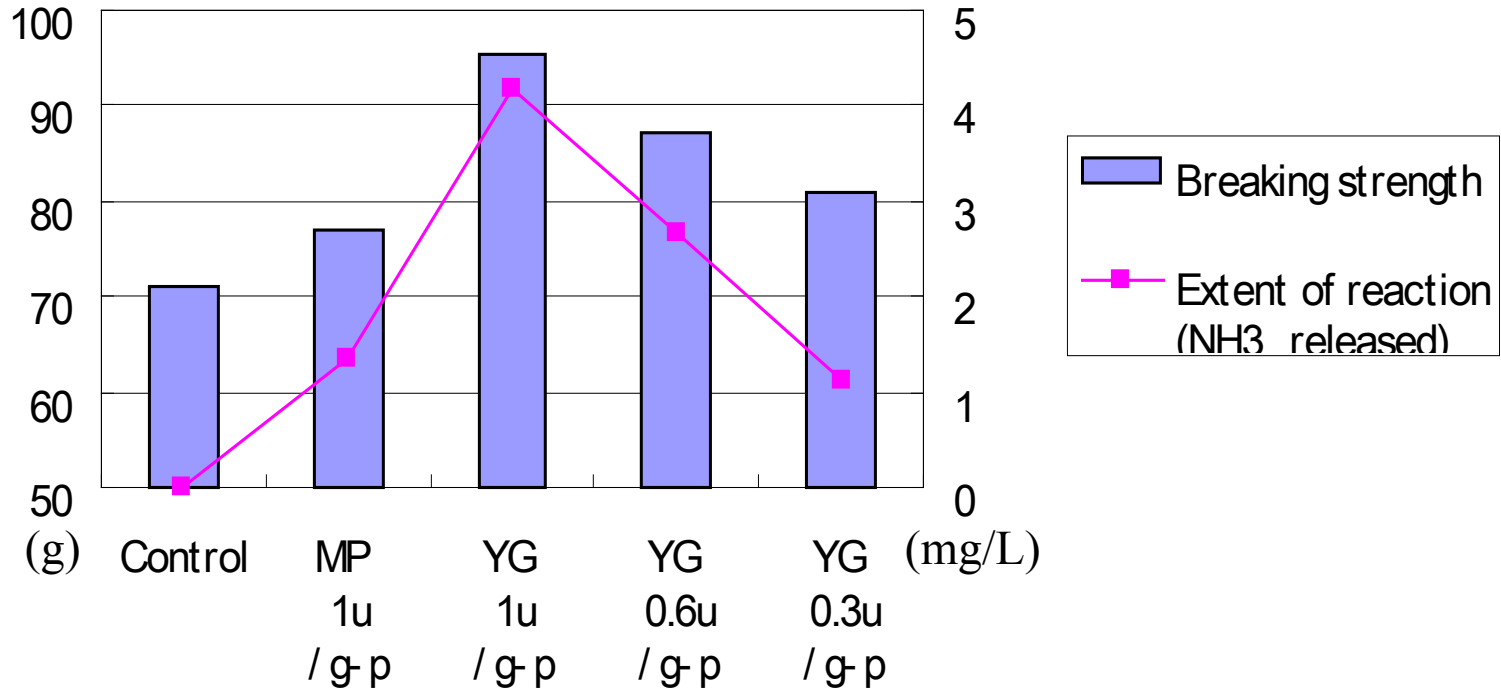
Reaction temp. 8°
Reaction time 12hr



Set yoghurt
Breaking strength
Extent of reaction

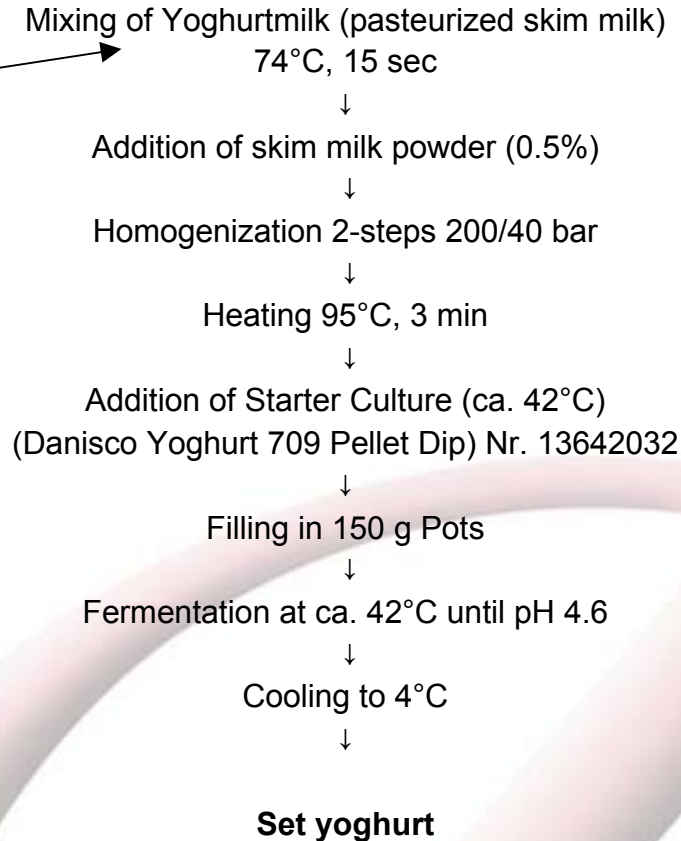
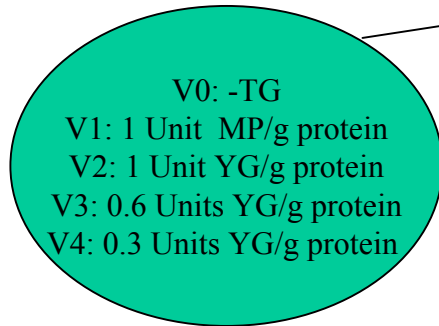
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Comparison between MP and YG



Comparison between MP and YG

Production flow (Low fat yogurt 0.1% fat)



Remarks:

- We also added 0.5% skim milk powder to Standard
- Skim milk powder (protein content ~ 35%) with low heat treatment

Gel strength of skim milk yoghurt (0.1% fat)

