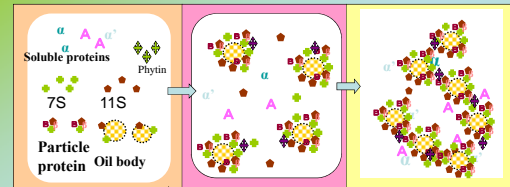


## Changes of tofu structure and physical properties in coagulant concentration

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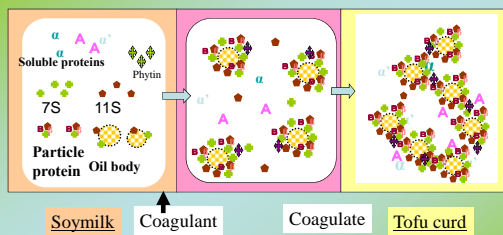
## Tofu curd formation from soymilk (by T.Ono)



The new idea of tofu curd formation has been introduced by us, 8 years ago.

Soy milk looks like bovine milk containing micellar protein particles and fat globules. Soy milk also contains particle proteins and oil body.

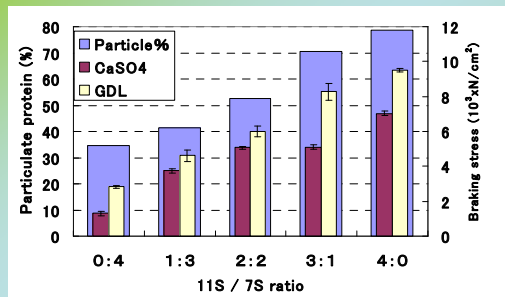
## Tofu curd formation from soymilk (by T.Ono)



When coagulant is added,  
Particle proteins adhere to oil body surface. These oil bodies are able to  
combine each others.

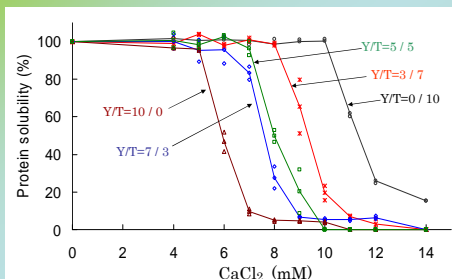
Then, the protein-packed oil bodies form tofu curd containing water.

By the increase of 11S/7S protein ratio, particulate protein was increased.  
Braking stress of tofu curd with  $\text{CaSO}_4$  and GDL were increased, too.



(Guo & Ono, JFS 2005)

By the increase of 7S content, the more coagulant was needed  
for the aggregation of soy proteins in soy milk.  
When Tosan205 (7S rich) in soymilk of mixed soybeans increased,  
the coagulant concentration for protein aggregation increased.



(Guo, ..., & Ono, JFS 2002)

G: Yumeminori, C: Tosan205  
(11S rich) (7S rich)

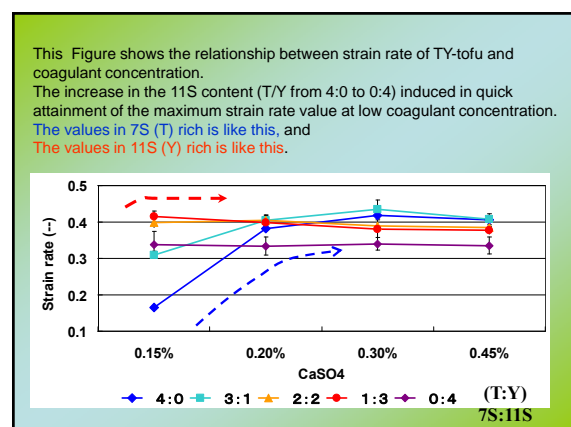
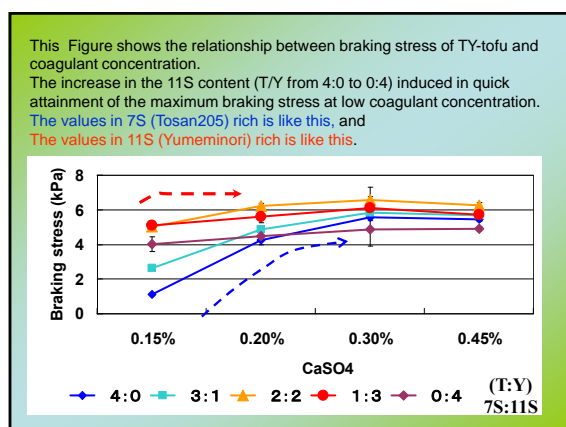
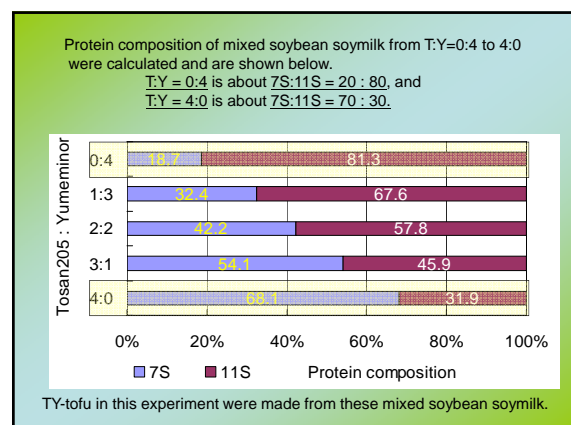
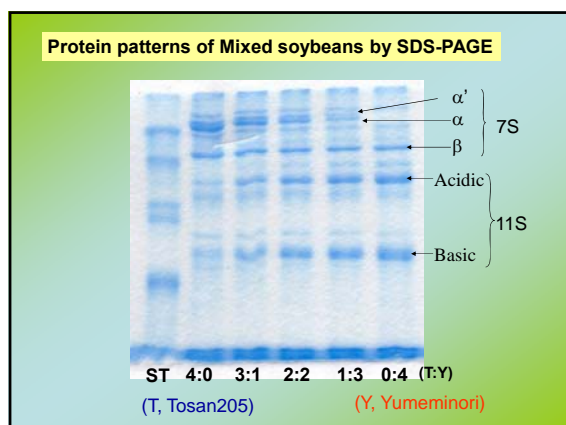
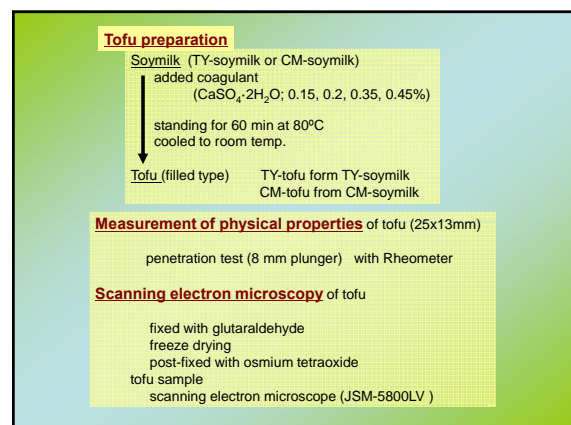
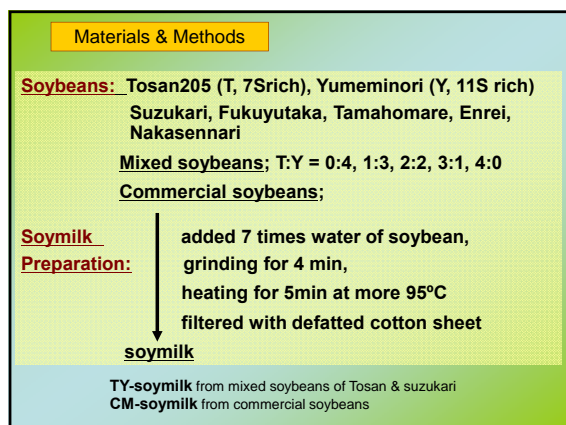
The soy milk containing the more 11S protein has the more particulate  
proteins, and makes the more hard tofu texture.

On the other hand, the soy milk containing the more 7S protein  
needs the more coagulant for the protein aggregation.

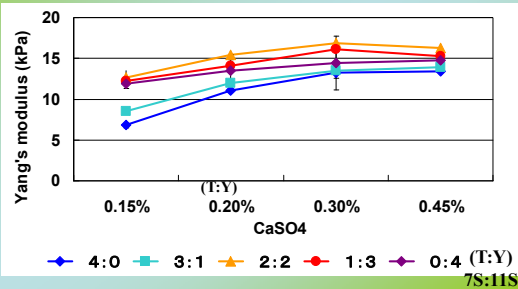
In this experiment, the change of the tofu texture by the variation  
of 11S/ 7S ratio and coagulant concentration was studied.

The optimal coagulant concentration was estimated for soymilk from  
the soybeans having different 11S/7S ratio

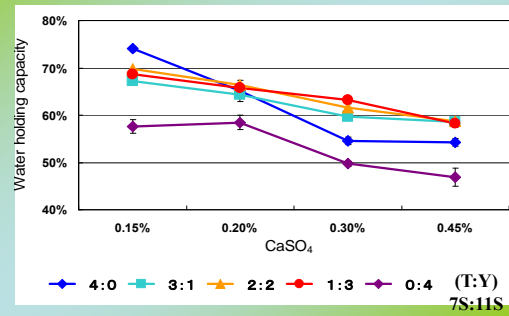
Tofu were made from the soybeans having different 11S/7S ratio  
by adding coagulants of various concentrations. The physical  
property and the electron microscope of the tofu were measured.



The relationship between Yang's modulus of TY-tofu and coagulant concentration are shown in Figure. The tendency of value variation against coagulant concentration is almost the same as the values of braking stress and strain rate as shown before.



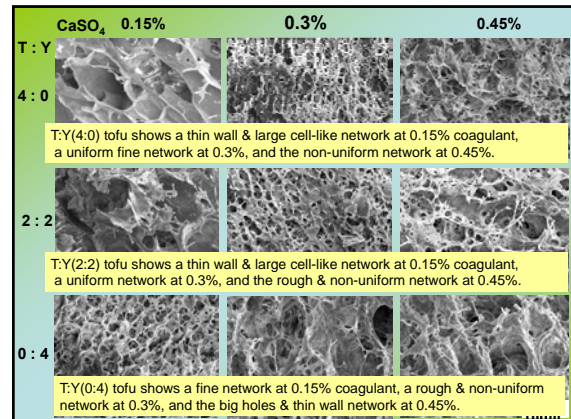
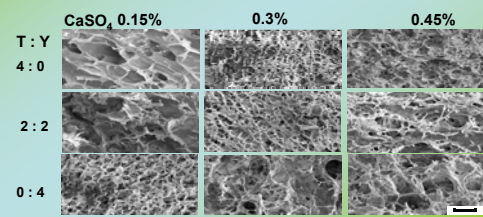
This Figure shows the relationship between water holding capacity of TY-tofu and coagulant concentration. Water holding capacity of TY-tofu was decreased with increasing coagulant concentration in spite of T(7S)/Y(11S) ratio.



Scanning electric microscopes of TY-tofu against coagulant concentration are shown in figure. Magnification is 2000

TY-tofu from upper to bottom line are T:Y= 4:0, 2:2, and 0:4.

Coagulant concentration from left to right are 0.15, 0.3, and 0.45%



Low — Coagulant (CaSO<sub>4</sub>) —> High

