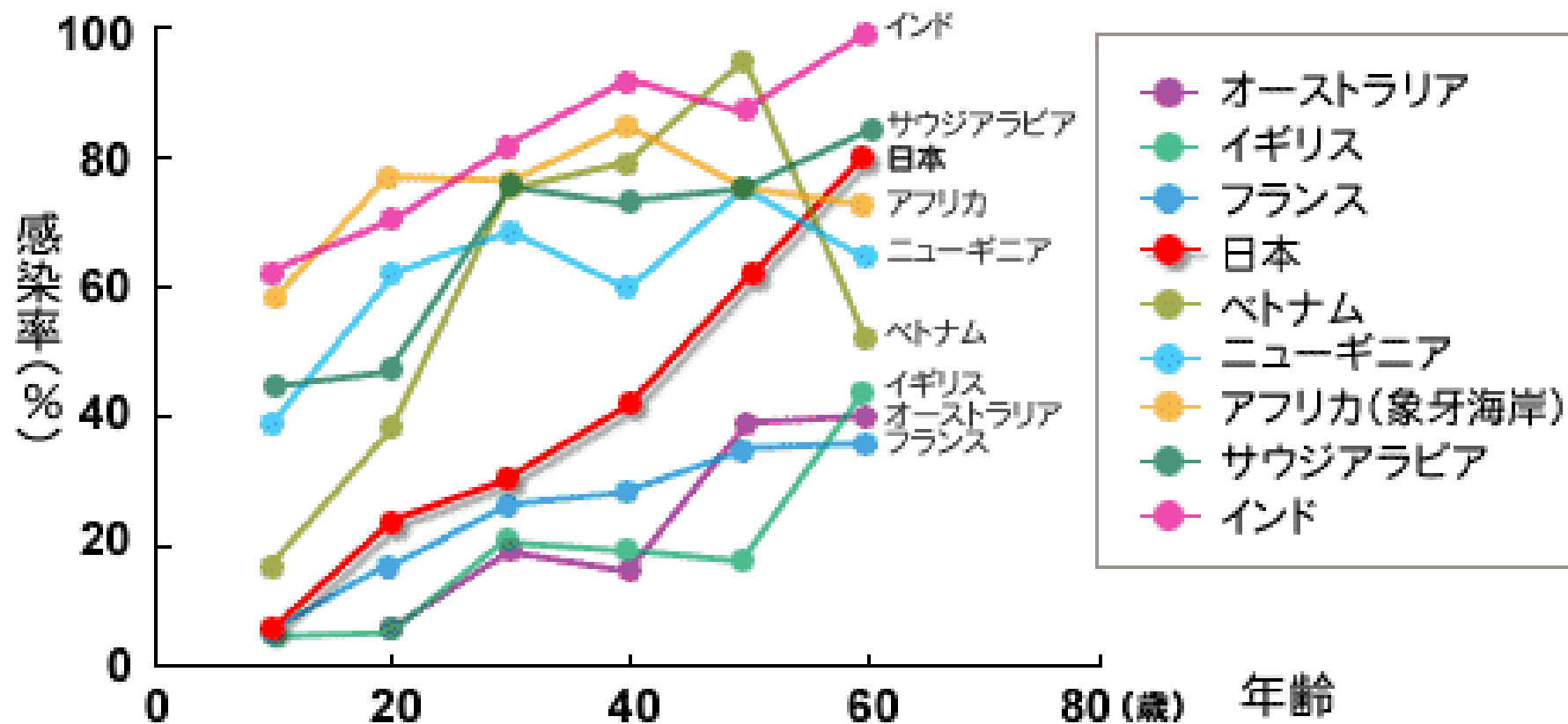


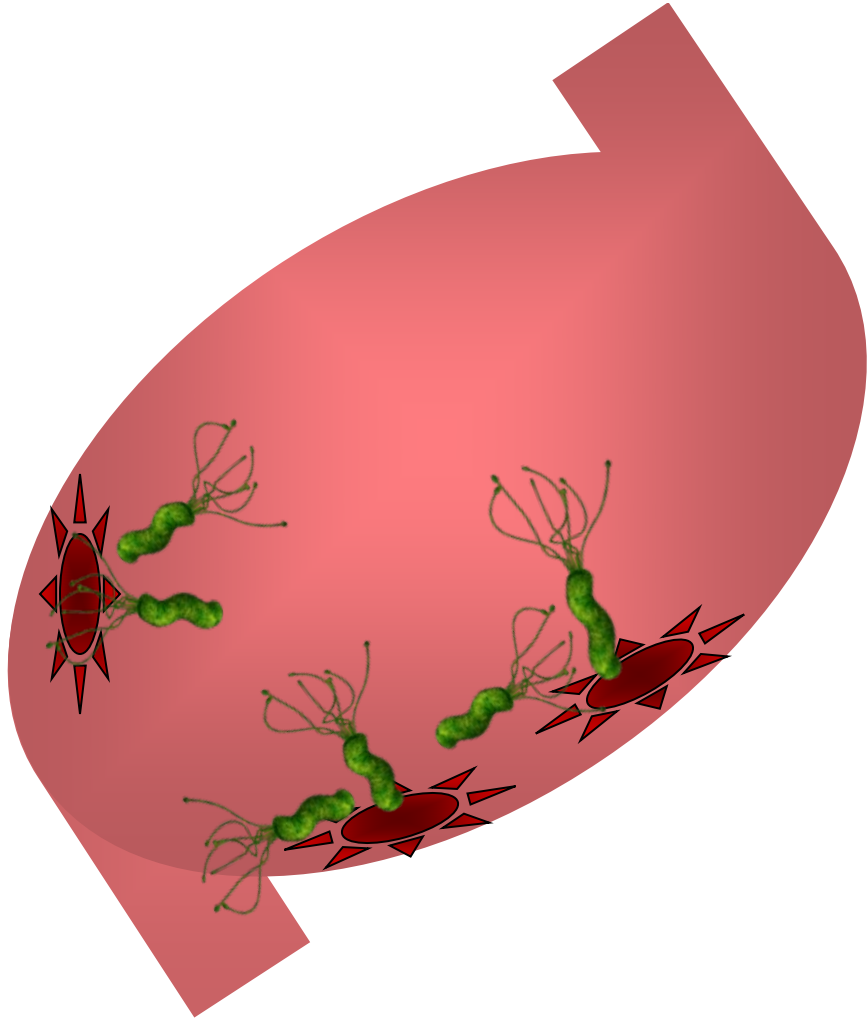
**Controls gastric ulcer infection**

# H. pylori positive rate in the world

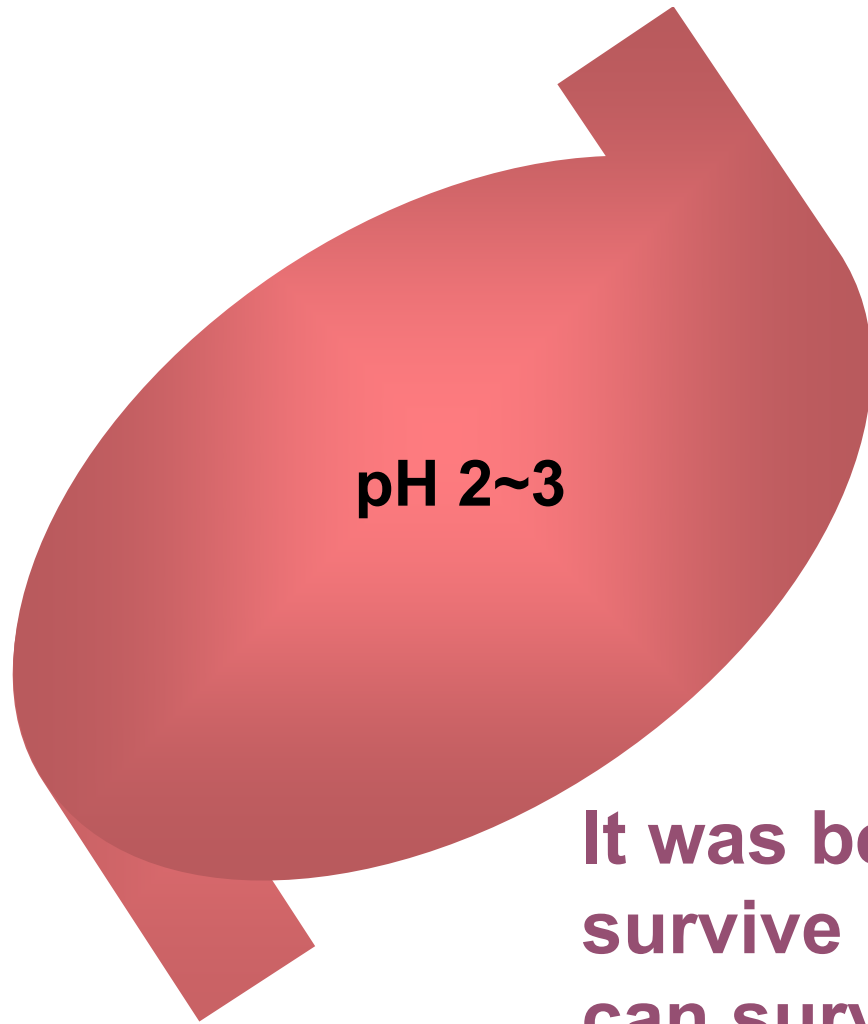
## H.pyloriの年代別感染率



# ***Helicobacter pylori* is associated with**



- **Gastritis**
- **Gastric ulcer**
- **Duodenal ulcer**
- **Gastric cancer**

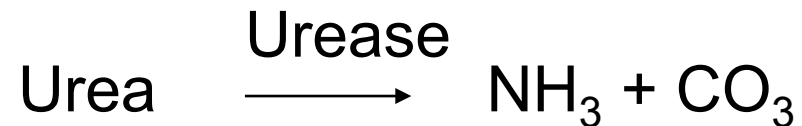


- **Strongly acidic**
- **Peristaltic motion**

It was believed that no microbes can survive in stomach. How *H. pylori* can survive and grow?

# Urease plays a pivotal role

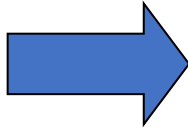
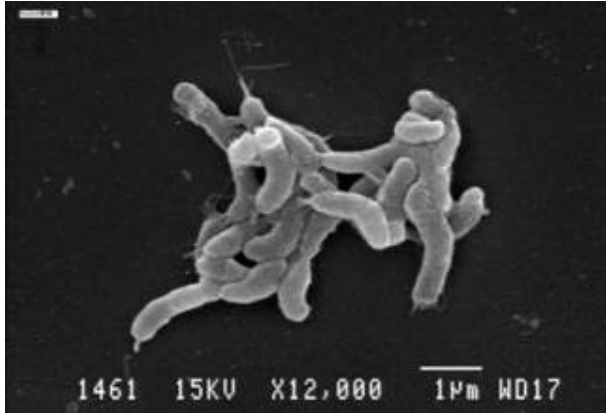
- As a strong **adhesin**: pH-dependent adherence to gastric mucin with optimal binding at pH 2.5-3.5
- As an **enzyme**: degrades urea to form  $\text{NH}_3$  and this reaction changes local environment from acid (pH 2-3) to neutral side (pH 7)



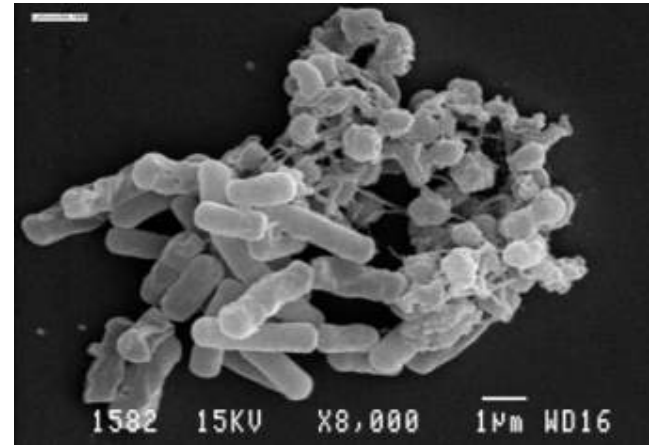
**specific IgY (HP) contains  
specific IgY against *H. pylori*  
urease**

# Morphological change of *H.pylori*

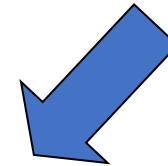
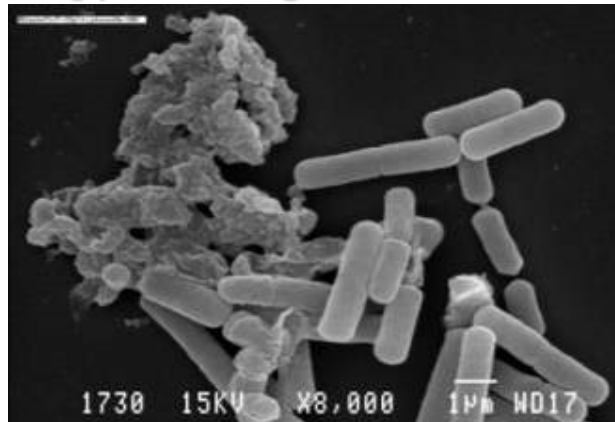
*H.pylori*



*H.pylori + Lactobacilli*

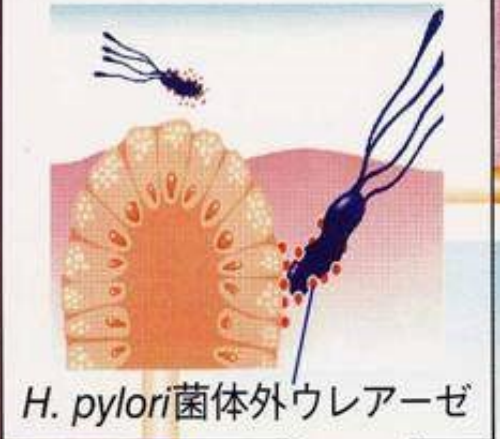


*H.pylori + IgY + Lactobacilli*



# H R

特集

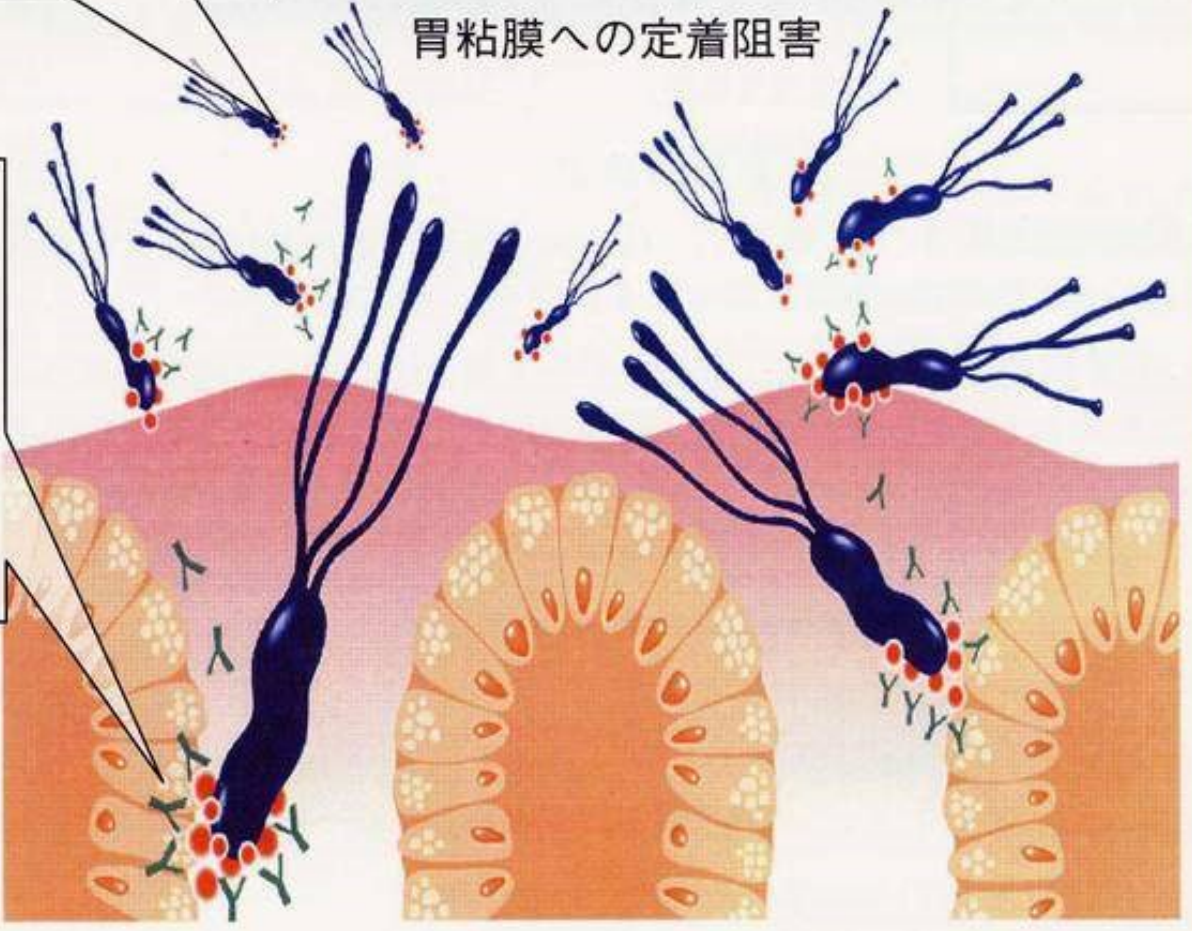


H. pylori菌体外ウレアーゼ

胃粘膜への定着阻害



抗H. pyloriウレアーゼIgY



抗H. pylori



Specific IgY (HP): Mouse study

# Materials and Methods

Animals:	NS:Hr/ICR hairless mice
Test material:	Specific IgY (HP)
Dosage:	0.25, 2.5, 25% in feed Fed to mice ad libitum
Period:	10 weeks
Assessment:	Bacterial count in gastric tissue

# Results

Treatment	Log <sub>10</sub> CFU / 0.1g gastric tissue / mouse	Negative mouse / Total mouse
Negative control	0.00 ± 0.00	6 / 6
Positive control	3.64 ± 0.39	0 / 10
0.25% Specific IgY (HP)	3.08 ± 0.79	0 / 10
2.5% Specific IgY (HP)	1.26 ± 1.47**	5 / 10 <sup>#</sup>
25% Specific IgY (HP)	0.94 ± 1.53**	7 / 10 <sup>##</sup>

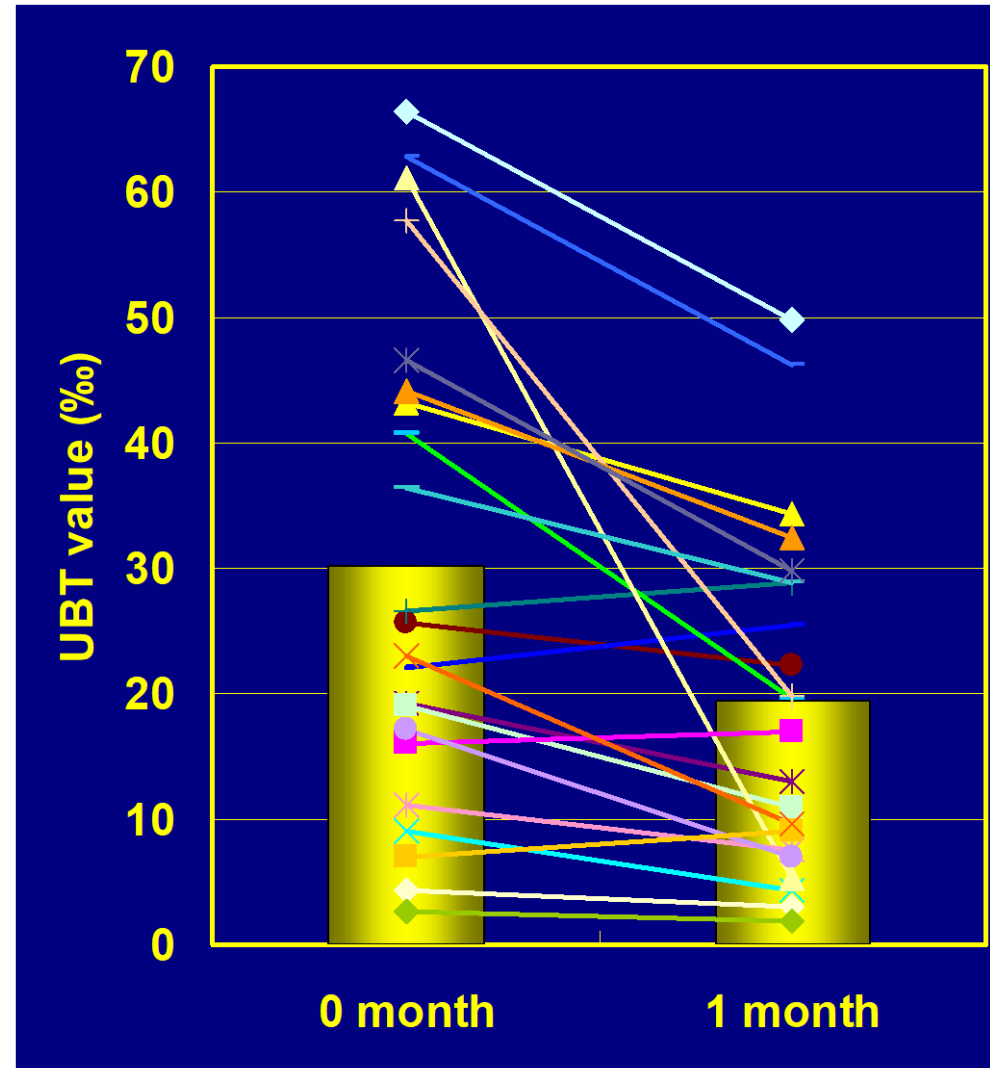
\*\*; p<0.01 compared to positive control group value, T test

#, ##; p<0.05 and 0.01 compared to positive control group, chi-square test

# Volunteer study (Test 1)

Volunteers:	22 volunteers ( <i>H.pylori</i> – positive)
Test material:	Specific IgY (HP)
Dosage:	1.5g / day
Period:	1 month
Assessment:	UBT (0, 1 month)

# Result



$P < 0.01$

# Volunteer study (Test 2)

Volunteers: 16 volunteers (*H.pylori* positive by UBT)

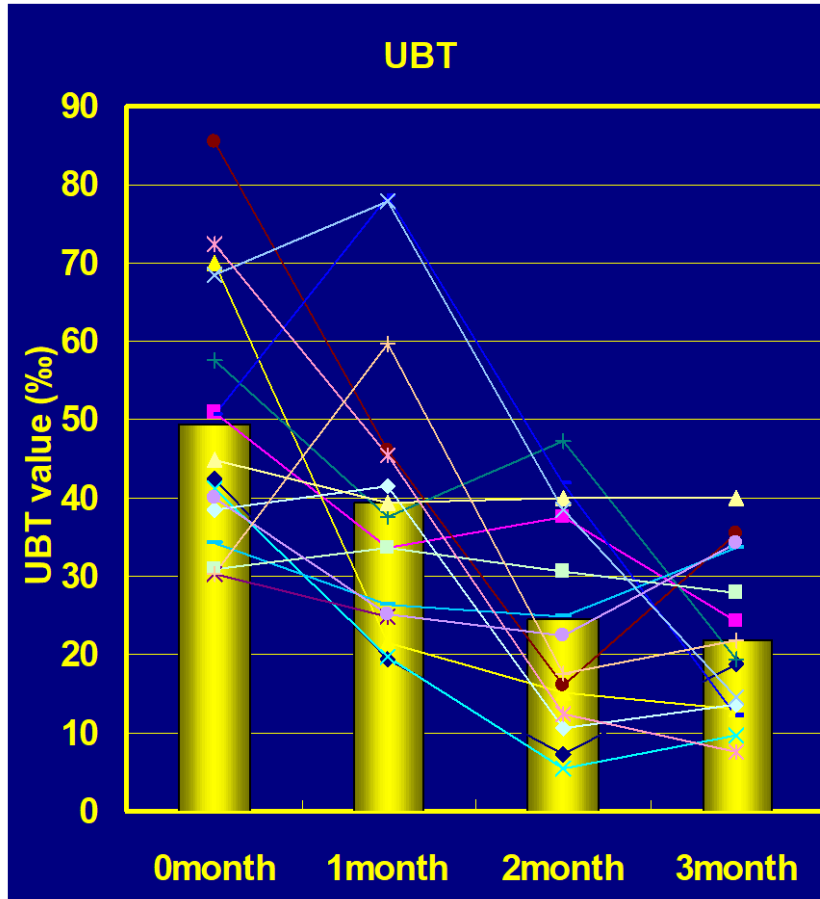
Test material: Yogurt containing 2.0g of Specific IgY (HP)

Dosage: 2 cups of yogurt / day

Period: 3 month

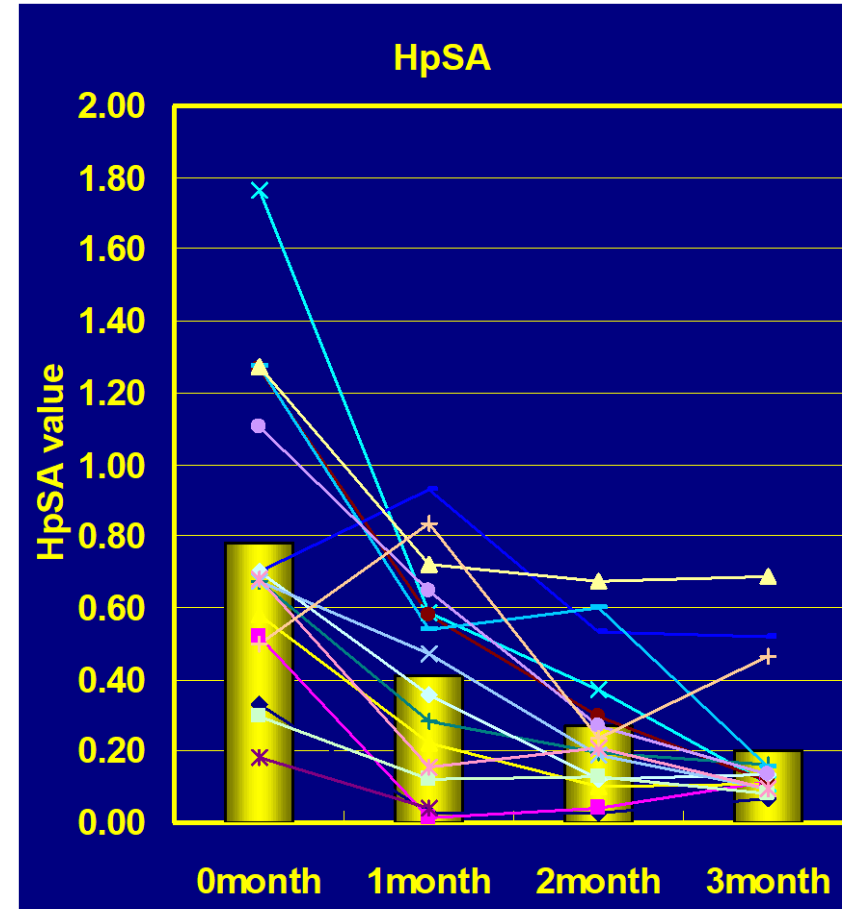
Assessment: UBT & HpSA (0, 1, 2, 3 month)

# Results



P<0.001

P<0.001



P<0.005

P<0.001

P<0.001

# Synergetic effect of Ovalgen HP and *Lactobacillus*

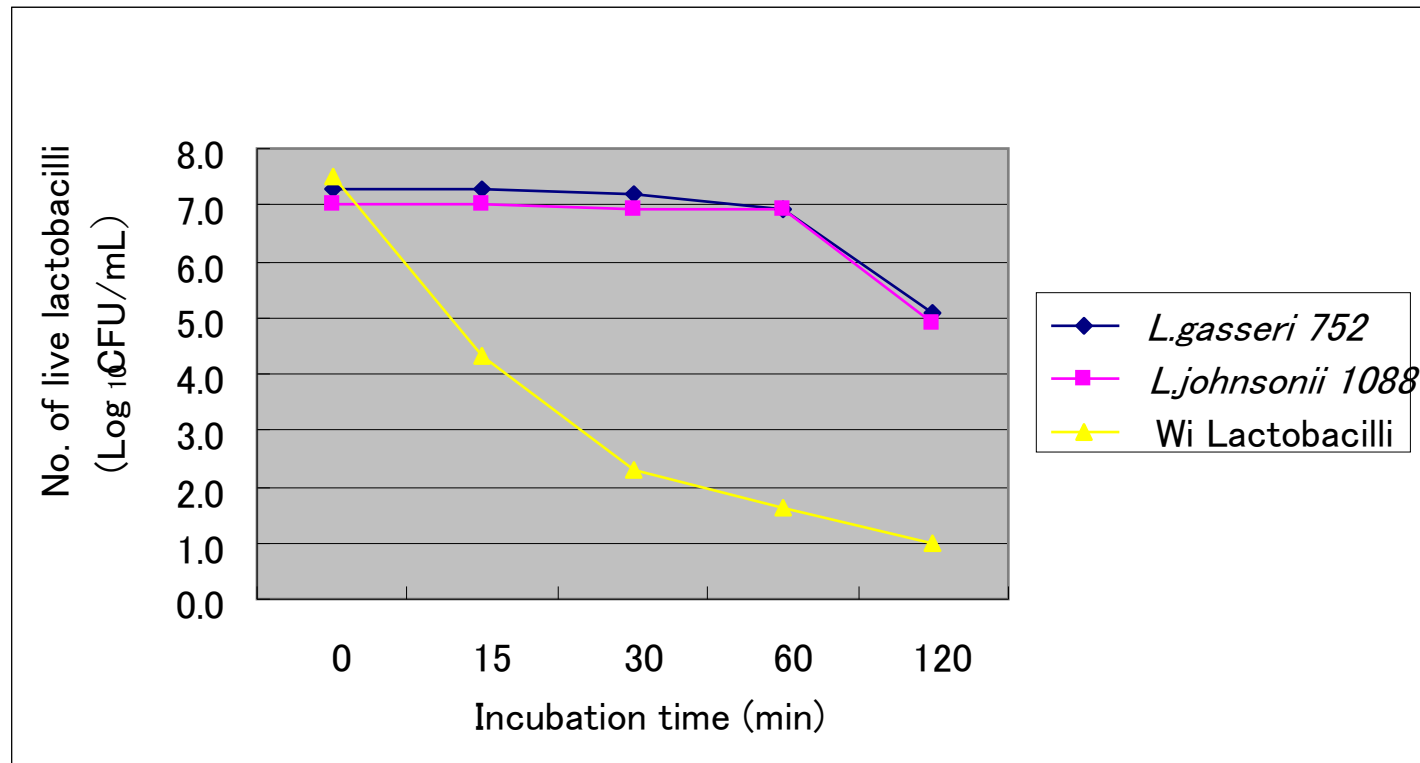
- Probiotics are known to inhibit growth of *H.pylori*.
- But most probiotic strains are not resistant against acid and so are easily killed in the stomach. Selection of acid-resistant probiotic strains are the key to success.
- Our *Lactobacillus gasseri* strain GL 752 (developed by Tokai University) is highly resistant to acid.



# Test of the resistance to acid (1)

(In 0.1M HCl - Sodium citrate buffer solution ; pH 1.5)

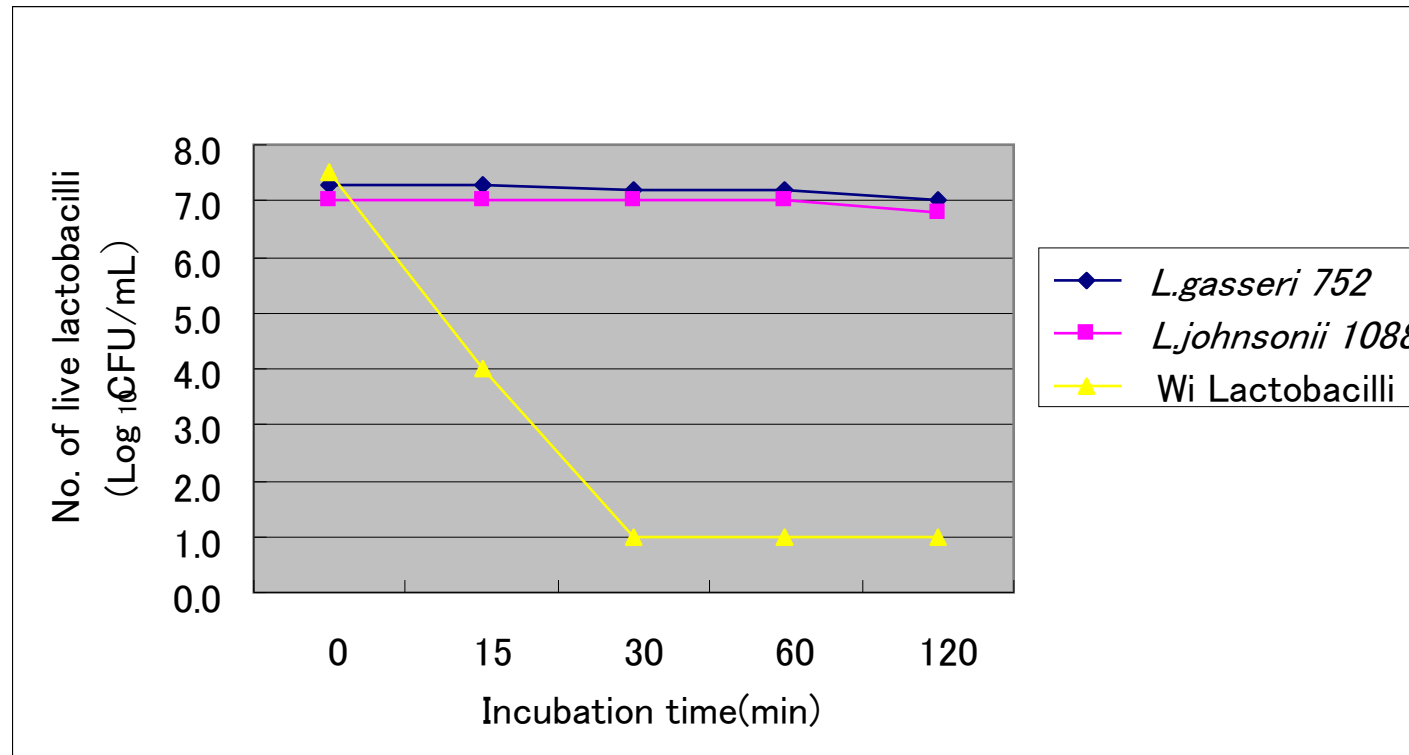
	No. of the survived lactobacilli (Log <sub>10</sub> CFU/mL)				
Incubation time (min)	0	15	30	60	120
<i>L.gasseri</i> LG752	7.3	7.3	7.2	6.9	5.1
<i>L.johnsonii</i> I088	7.0	7.0	6.9	6.9	4.9
Wi Lactobacilli	7.5	4.3	2.3	1.6	1.0



## Test of the resistance to acid (2)

(In 0.1M HCl - Sodium citrate buffer solution ; pH 2.0)

	No. of the survived lactobacilli (Log <sub>10</sub> CFU/mL)				
Incubation time (min)	0	15	30	60	120
<i>L.gasseri</i> LG752	7.3	7.3	7.2	7.2	7.0
<i>L.johnsonii</i> 1088	7.0	7.0	7.0	7.0	6.8
<b>Wi Lactobacilli</b>	<b>7.5</b>	<b>4.0</b>	<b>1.0</b>	<b>1.0</b>	<b>1.0</b>



# Number of *H.pylori* in the stomach of mice after treatment with IgY and / or *L.gasseri* No.752

