



Trial Report

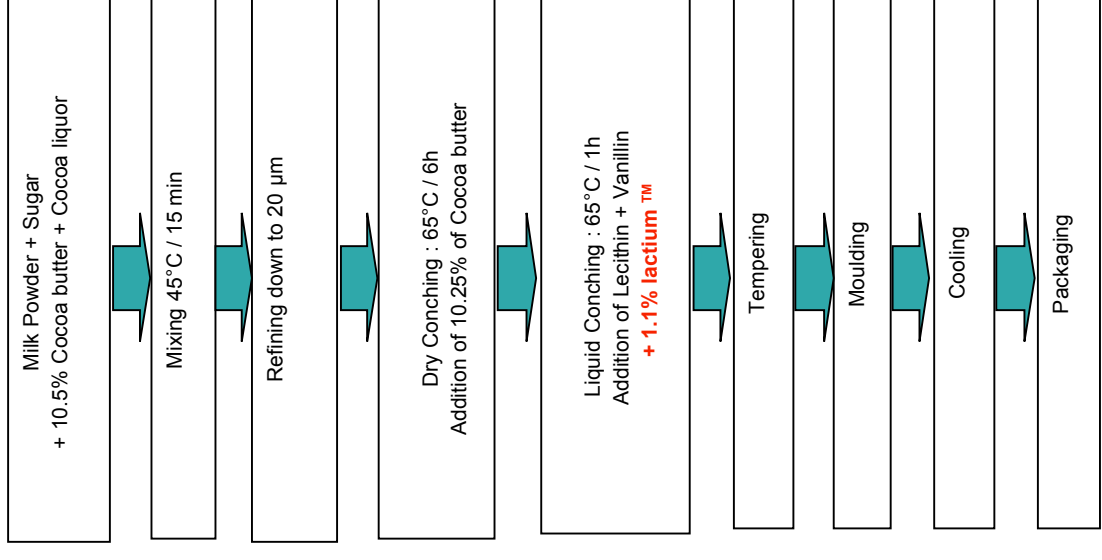
N°M2/2007

lactium® in chocolates

June 2006



recipe & process



Raw Materials	Milk Chocolate	Milk Chocolate with lactium™
Whole Milk Powder	23.00%	21.90%
Sugar	44.60%	44.60%
Cocoa butter	20.75%	20.75%
Cocoa liquor	11.00%	11.00%
Lecithin + vanillin	0.65%	0.65%
lactium™		1.10%
Total	100.00%	100.00%

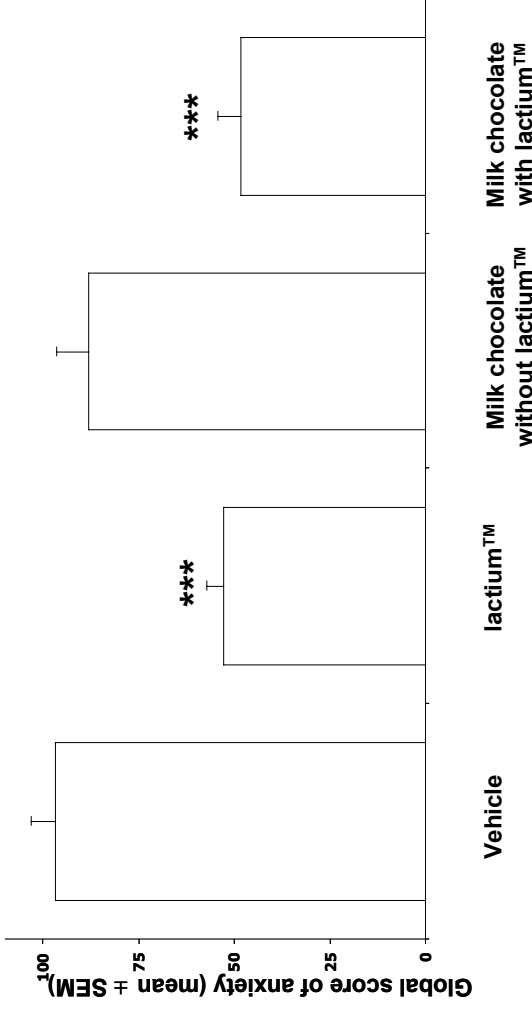
- **Visual appearance :**
no significant difference between the Milk Chocolate with lactium™ and the reference
- **Physical stability :**
Similar texture (snapping, melting, stickiness) after 3 months
- **Sensory properties (triangle test) :**
no significant difference between the Milk Chocolate with lactium™ and the reference
- **Recovery of α_{s1} -CN-(91-100) peptide :**
No data



INNER PEACE OUTER STRENGTH

Milk Chocolate (2)

activity



Products	Vehicle (n = 12)	lactium™ (n = 12)	Milk chocolate with lactium™ (n = 12)	Milk chocolate without lactium™ (n = 12)
Mean ± SEM	96.96 ± 6.24	52.63 ± 4.50	48.32 ± 6.03	88.13 ± 8.24
ANOVA F(3,43)=14.68; P<0.0001 Dunnnett's t test (vs. Vehicle) Significance		t=5.73 P<0.001	t=5.59 P<0.001	t=0.86 P<0.001

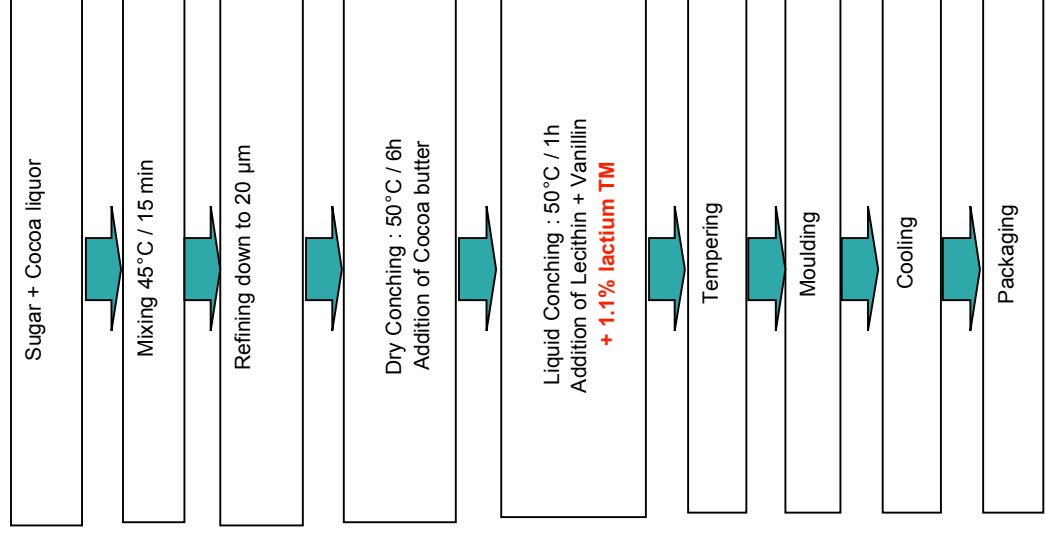
Dunnnett's test (vs. Vehicle): *** p < 0.001

CONCLUSIONS :

- ✓ When added after the conching, the chocolate process does not decrease the activity of lactium™ .
- ✓ A milk chocolate without lactium™ has no activity.



recipe & process

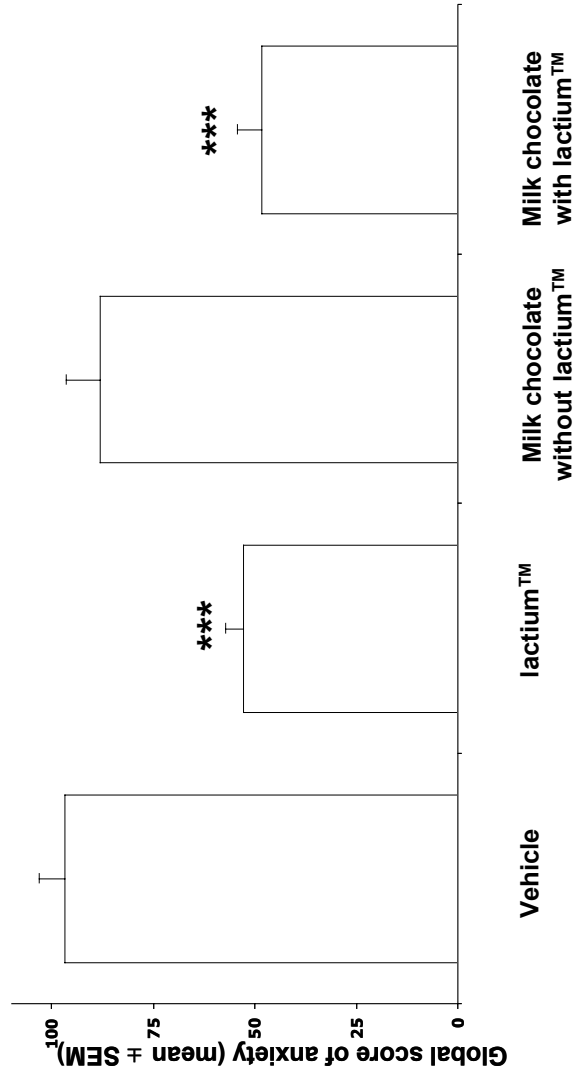


Raw Materials	Dark Chocolate	Dark Chocolate with lactium™
Sugar	44.70%	44.00%
Cocoa butter	5.65%	5.65%
Cocoa liquor	49.00%	49.00%
Lecithin + vanillin	0.65%	0.65%
lactium™		0.70%
Total	100.00%	100.00%

- **Visual appearance :**
no significant difference between the Dark Chocolate with lactium™ and the reference
- **Physical stability :**
Similar texture (snapping, melting, stickiness) after 3 months
- **Sensory properties (triangle test) :**
no significant difference between the Dark Chocolate with lactium™ and the reference
- **Recovery of α_{s1} -CN-(91-100) peptide :**
No data



activity



Products	Vehicle (n = 12)	lactium™ (n = 12)	Dark chocolate with lactium™ (n = 12)	Dark chocolate without lactium™ (n = 12)
Mean ± SEM	96.79 ± 8.66	50.88 ± 3.72	52.55 ± 7.91	75.50 ± 10.46
ANOVA F(3,41)=7.98; P<0.001 Dunnett's t-test (vs. Vehicle) Significance		4.87 P<0.005	t=3.75 P<0.005	t=1.58 NS

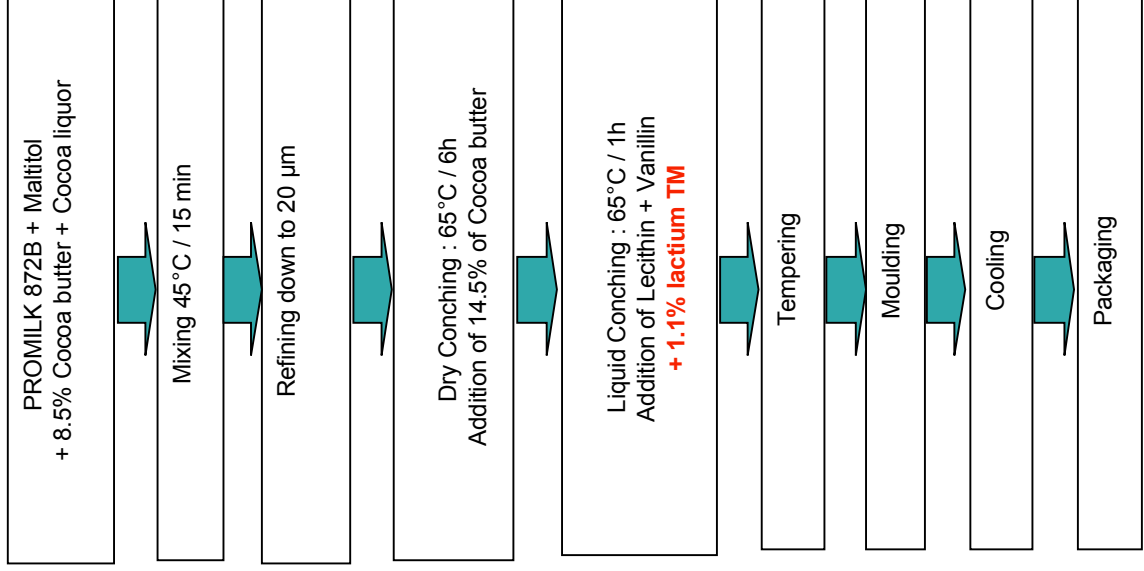
Dunnett's test (vs. Vehicle); *** p< 0.001

CONCLUSIONS :

- ✓ When added after the conching, the chocolate process does not decrease the activity of lactium™ .
- ✓ A Dark chocolate without lactium™ has no activity.



recipe & process



Raw Materials	Sugar free Milk Chocolate	Sugar free Milk Chocolate with lactium™
PROMILK 872B	7.00%	7.00%
Anhydrous Milk Fat	6.00%	6.00%
MALTITOL	48.45%	47.35%
Cocoa butter	23.00%	23.00%
Cocoa liquor	15.00%	15.00%
Lecithin + vanillin	0.55%	0.55%
lactium™		1.10%
Total	100.00%	100.00%

- **Visual appearance :**
no significant difference between the Sugar free « Milk Chocolate » with lactium™ and the reference
- **Physical stability :**
Similar texture (snapping, melting, stickiness) after 3 months
- **Sensory properties (triangle test) :**
no significant difference between the Sugar free « Milk Chocolate » with lactium™ and the reference
- **Recovery of α_{s1} -CN-(91-100) peptide :**
No data
- **Activity (CDB test) :**
No data



INNER PEACE OUTER STRENGTH

- **Ingredia proposes you 3 recipes chocolate-based with lactium® inside**
- **Theses recipes allow to obtain a good tasted chocolate without off-flavor**
- **Moreover, theses recipes preserve lactium® bioactivity which have been checked by CDB tests**

➤ By using **INGREDIA chocolate recipes, you can developped a lactium® based chocolate which has a wellness efficacy.**

It allows you to develop a specific chocolate with a original positioning.