

MICROBIAL RENNET for Cheese Production

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Project Leader



BIOTECH Microbial Rennet

- an effective milk coagulant produced by solid substrate fermentation using the fungus *Rhizopus chinensis* BIOTECH 3273
- developed by the National Institute of Molecular Biology and Biotechnology (BIOTECH) through funding from DOST and DA-BIOTECH.
- The product is a better substitute for traditionally produced animal rennet.
- It has been found to be better than imported rennet in terms of quality and volume of cheese produced



Year	Net Weight (kg)	Trade Value (US\$)
2007	52,920.00	476,268.00
2008	33,681.00	369,758.00
2009	49,496.00	947,640.00
2010	45,365.67	868,752.52

Source: Based on United Nations Commodity Trade Statistics Database, 2007-2010



- Extract from animal abomasum
 - ❖ Rennet from milk fed calf
 - >Chymosin or rennin - 95%
 - >Pepsin - 5%
 - ❖ Rennet from older cows, sheep, carabao, etc
 - >Chymosin – 5%
 - >Pepsin – 95%
- Imported rennet
- Acid



BIOTECH RENNET



Product	Liquid	Granule
Activity	60 IMCU	100 IMCU
Application rate	10 ml/L milk	5 grams/L milk
Price	PhP 480/L	PhP 750/Kg
Shelflife	5 months	1 year
Present Production	60 L/mo	30Kg/mo

- **Projected annual demand: 43 tons**
- **PCIEERD project: Scale up target production is 20% of the total demand**
- **Technology adaptors/taker: PCC & Aust Phil Foods**



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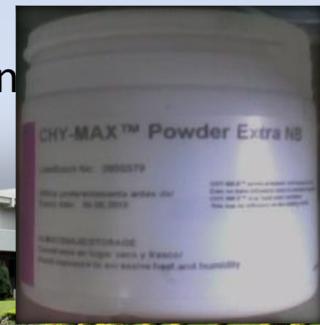
Milk coagulant being used by local dairy processors and multinational companies compared to BIOTECH microbial rennet

	Cost of coagulant per 100 L milk	% Cheese Yield	Production Cost of Cheese/100 grams	Net benefit /100L milk
Animal Rennet*	700.00	18	20.53	5,305.00
Chymax**	56.00	18	16.95	5,949.00
Vinegar***	250.00	10	32.86	1,714.38
BIOTECH rennet Granules	350.00	23	14.54	8,155.00
BIOTECH Liquid rennet	480.00	23	15.11	8,025.00

*Rennet extracted from 4th stomach of ruminant (PhP 70/L)

**Commercial rennet produced by Pizer and distributed by Christian Hansen, recombinant rennet , (PhP 21,000 per Kilogram, 2080 IMCU/gram)

*** Commonly used in the Visayas and Mindanao (PhP 25/L)



Market



The market for microbial rennet is attractive because there is still no local producer or dominant distributor serving the small to medium cheese manufacturers .

Positioning: The “best quality and most efficient cheese coagulant” in the market.

Price: P 480.00 per liter and P 750.00 per Kg – similar price as the imported rennet to emphasize the best product image, better quality of the product and its efficiency as cheese coagulant.

LOCATION MAP OF BIOTECH RENNET CLIENTS



Profitability Analysis

	Liquid Concentrate	Rennet Granules
Net Present Value (15% discount rate)	1,624,560.92	1,534,580.72
Total Investment	1,702,825.79	4,492,624.72
Selling Price	480.00/ Li	750.00/ kg
Break-even point	8,770.84 Li	11,845.88, kg
Profit margin	194.15/Li	379.26/kg
Break-even period (in year)	1.5 years	1.5 years
Average net income/year	1,072,168.85	1,916,675.97
Average return of Investment/year (%)	62.96	42.66

Example of Opportunity sites



Opportunity sites



BATANGAS

LEGEND:



DAIRY PRODUCTION AREAS



WITH MILK PLANTS

Opportunity sites



Opportunity sites



Opportunity sites

