PAPAIN

QUALITY AND STANDARDS : As per BPC/ IP specifications

PRODUCTION CAPACITY : 4.2MT BPC grade or 6.3 MT IP grade Papain

1.0 PRODUCT AND ITS APPLICATIONS

Papain is a proteolytic enzymes produced from the latex of the green papaya fruits. It has high protein hydrolysing capacity. Papain is used in many industries. At present, the food industries are the biggest users of papain, primarily for chill proofing of beer, tenderising of meat and freeing of food proteins. Other applications are in tanning of leather and hides, degumming of silk, cheese manufacture, treatment of vegetable proteins, as fish hydrolysates, in treatment of fish protein concentrate and fish meals, in pharmaceuticals, aroma and perfume industries and in effluent treatment etc.

2.0 MARKET POTENTIAL

The total estimated production of papain in India is around 150 tonnes per year. About 35% is BPC grade papain and the rest is purified papain, 55% of the BPC grade papain is consumed internally and the rest is exported, while 90% of the purified papain is exported. A number of industries are coming up, which is expected to give a boost to the demand of this product.

3.0 BASIS AND PRESUMPTIONS

a) The unit proposes to work at least 300 days per annum on single shift basis.
b) The unit can achieve its full capacity utilization during the 3rd year of operation.
c) The wages for skilled workers is taken as per prevailing rates in this type of industry.
d) Interest rate for total capital investment is calculated @ 12% per annum.
e) The entrepreneur is expected to raise 20-25% of the capital as margin money.
f) The unit proposes to construct own building.
g) Costs of machinery and equipment are based on average prices enquired from machinery manufacturers.

4.0 IMPLEMENTATION SCHEDULE

Project implementation will take a period of 8 months. Break-up of the activities and relative time for each activity is shown below:

❖ Scheme preparation and approval	:	01 month
❖ SSI provisional registration	:	1-2 months
❖ Sanction of financial supports etc.	:	2-5 months
❖ Installation of machinery and power connection	:	6-8 months
❖ Trial run and production	:	01 month

5.0 TECHNICAL ASPECTS

5.1 Location

The plant should be located in the papaya producing regions. However, supply of electricity, water, etc. is to be ensured.

5.2 Availability of Raw Material

9.1.3 Pre-operative Expenses

Consultancy fee, project report, deposits with electricity department etc.	:	0.70

9.1.4 Total Fixed Capital (9.1.1+9.1.2+9.1.3) **: 12.50**

9.2 Recurring expenses per annum

9.2.1 Personnel

Designation	**No.**	**Salary Per month**	**Amount (Rs.lakh)**
Factory Manager	1	8000	0.96
Office assistant	1	5000	0.60
Supervisors	2	5000	1.20
Skilled workers	3	2000	0.72
Unskilled workers	8	1500	1.44
			4.92
Perquisites @10%			0.49

Total :	15		5.41

9.2.2 Raw Material including packaging materials

Particulars	**Qty.(MT)**	**Rate**	**Amount (Rs. lakh)**
+			
Raw material			**6.30**
Packaging material			**0.40**

Total:			**6.70**

9.2.3 Utilities **Amount (Rs. lakh)**

Power 20 kWH	0.83
Water 5 kL/day	0.01

Total:	0.84

9.2.4	**Other Contingent Expenses**	**Amount (Rs. lakh)**
	Repairs and maintenance@10%	1.12
	Consumables & spares	1.16
	Transport & Travel	
	Publicity	
	Postage & stationery	
	Telephone	
	Insurance	0.12

	Total:	2.40

9.2.5	**Total Recurring Expenditure**	**Amount (Rs. lakh)**
	(9.2.1+9.2.2+9.2.3+9.2.4)	15.35

9.3	**Working Capital**	**3.84**
	Recurring Expenditure for 3 months	

9.4	**Total Capital Investment**	**Amount (Rs. lakh)**
	Fixed capital (Refer 9.1.4)	12.50
	Working capital (Refer 9.3)	03.84

	Total:	16.34

10.0 FINANCIAL ANALYSIS

10.1	**Cost of Production (per annum)**	**Amount (Rs. lakh)**
	Recurring expenses (Refer 9.2.5)	15.35
	Depreciation on building @5%	00.15
	Depreciation on machinery @10%	00.77
	Depreciation on furniture @20%	00.10
	Interest on Capital Investment @12%	01.96

	Total:	16.37

10.2 Sale Proceeds (Turnover) per year

Item	**Qty. (MT)**	**Amount (Rs.lakh)**
BPC grade papian	4.2	21.00
Or		
IP grade papain	6.3	

10.3 Net Profit per year

= Sales - Cost of production

= 21.00 - 16.37

= Rs. 4.63 lakh

10.4 Net Profit Ratio

$$= \frac{\text{Net profit X 100}}{\text{Sales}}$$

$$= \frac{4.63 \text{ X } 100}{21}$$

= 22%

10.5 Rate of Return on Investment

$$= \frac{\text{Net profit X 100}}{\text{Capital Investment}}$$

$$= \frac{4.63 \text{ X } 100}{16.34}$$

= 28%

10.6 Annual Fixed Cost

	Amount (Rs. Lakh)
All depreciation	1.02
Interest	1.96
40% of salary, wages, utility, contingency	3.46
Insurance	0.12
Total:	6.56

10.7 Break even Point

$$= \frac{\text{Annual Fixed Cost X 100}}{\text{Annual Fixed Cost + Profit}}$$

$$= \frac{6.56 \text{ X } 100}{6.56 + 4.63}$$

$$= \frac{656}{11.19}$$

= 59%

11.0 ADDRESSES OF MACHINERY AND EQUIPMENT SUPPLIERS

Blue Star Ltd,
23, 2nd Lane Beach
Chennai – 600 001

Gardeners Corporation
158, Golf Links
New Delhi – 110 003

Jyothi Industries
31, Pampa Mahakavi Road
Bangalore – 560 004

K.Sons International
B-77, Industrial Estate
Rajajinagar, Bangalore – 560 044

12.0 ANY OTHER SPECIAL FEATURE

The activity of papain has to be checked periodically. The dehydration facilities may be utilized for processing other locally available fruits for further utilization of available capacity.