

DEHYDRATED DRUMSTICK (MORINGA OLIFERA) POWDER

1. INTRODUCTION

Drumstick also known as Moringa Olifera scientifically is a unique vegetable that contains many types of amino-acids, antioxidants, anti-inflammatory, anti-microbial compounds and nutrients which make it one of the best nutritional supplements. It is grown in large quantities in the State and especially in the southern districts. Drumstick forms an important ingredient in sambhar prepared traditionally at home or in restaurants and eating-houses. The flavour is most preferred. Being messy to use, the powder is finding a lot of acceptability both in India and abroad. There is a considerable surplus of this vegetable that can be processed (dehydrated) for consumption throughout the year.

2. PRODUCT AND ITS APPLICATION

Moringa Oleifera, an Indian origin plant has gained its importance due to nutraceutical values and is considered as indispensable plant for health management. It is an excellent source of minerals like iron, calcium and vitamins A, B, B1, B2, B3, B6, C, E as well as macro minerals, trace minerals and phytonutrients. This powder can be taken as a nutraceutical supplement and as food additive. Moringa is used for anemia, arthritis and other joint pain (rheumatism); asthma; cancer; constipation; diabetes; diarrhoea; epilepsy; stomach pain and ulcers, intestinal ulcers; intestinal spasms; headache; heart problems; high blood pressure; kidney stones; fluid retention; thyroid disorders; beneficial for lactating mothers and bacterial, fungal, viral, and parasitic infections. This product owing to extraordinary nutritional value is used for treating malnutrition.

3. DESIRED QUALIFICATION OF PROMOTER

Graduate from Life Sciences and allied disciplines. Having knowledge about marketing or possess marketing network.

4. INDUSTRY OUTLOOK/ TREND

Dehydrated drumstick powder is used in various formulations of nutraceutical products. In pharmaceutical, there are number of verticals but nutraceutical is an area which is growing at faster speed in India due to awareness for healthcare. Increased life span in India and growing population of senior citizens has increased the demand for nutraceutical products and their ingredients like drumstick powder. It is estimated that nutraceuticals demand is growing at the rate of 10% per annum.

5. MARKET POTENTIAL AND MARKETING ISSUES, IF ANY

Food processing industries purchase the product in bulk quantities. The dehydrated powder also has a good export potential. The major market outlets are the "A" class outlets. The product also finds placement in self-service counters and departmental stores. In the initial period, awareness in the market may be created by the promoters. Also, as long as the government and NGO's programs on malnutrition exists, the market size will become bigger, stable and permanent.

While the Indian nutraceutical industry is currently nascent, it has great potential and is expected to grow at a growth rate of 16 percent year on year for the next five years. This makes it one of the key markets for entry for nutraceutical product and ingredient manufacturers.

6. RAW MATERIALS REQUIREMENT

Raw materials will never be a problem since drumsticks are used as raw materials which are easily available.

7. MANUFACTURING PROCESS

- **Washing**

Fresh mature drumsticks are selected for processing. They are washed to remove adhering dirt.

- **Grading**

The vegetable is graded to remove damaged and immature sticks.

- **Steaming and blanching**

The sticks are steamed and blanched in huge tanks to facilitate pulp extraction.

- **Pressing**

The soft sticks are pressed between rollers to extract the pulp.

- **Slurry preparation**

Thick slurry is prepared with the pulp obtained.

- **Drying**

The slurry is dried in a vacuum drier with the core drying temperature ranging between 50 to 55 degrees centigrade.

- **Grinding**

It is ground to a fine powder along with some edible starches and anti-caking agents.

7.1 Quality specifications

The product should be free from mold and fungal growth.

It should be free from any fermented odour, coliforms, salmonella and streptococci bacteria. The moisture content in the product should not normally exceed 6 to 8%.

It shall not contain any added flavours or colours.

7.2 Pollution control measures

Not necessary as there are no pollutants or effluents.

7.3 Energy conservative measures

Common measures will do.

7.4 Fruit Products Order License

A FPO license is necessary for processing this vegetable

7.5 Packaging

Dehydrated drumstick powder can be packed in metallised or foil pouches for retail packaging. Bulk packaging can be in tins.

7.6 Manufacturing capacity

The plant will be in operation for three shifts a day. The plant will process 1500 kgs of drumstick per day. The edible portion of drumstick is 83% and it has a moisture content of 86%. The yield of dehydrated drumstick powder will be 15% of the weight of raw material used. The total quantity of finished product per annum would be 67.5 metric tons. The time period required for achieving full capacity utilization is five years.

8. MANPOWER REQUIREMENT

The project will require production manager, Chemist, Skilled and unskilled workers, packaging workers, and other administrative staff.

9. IMPLEMENTATION SCHEDULE

The project can be implemented within six months by securing finance. The technology and equipment are available indigenously. The industrial shed required for this project may be obtained from readily available buildings in the industrial zone. The process of drug license, procuring machinery, training of manpower etc. may be done simultaneously to save time.

10. COST OF PROJECT

Sr. No	Particulars	Rs. (lakhs)
1	Land	-
2	Building	35.00
3	Plant and Machinery	110.7
4	Laboratory equipment	5.00
5	Furniture and Fixtures	5.00
6	Electrification and Power connection	10.00
7	Machinery Spares	5.00

8	Margin for working capital	26.00
9	Total	196.7

11. MEANS OF FINANCE

Means of Finance

SN	Particulars	Rs. (lakhs)
1	Promoter's contribution	58.8
2	Bank Finance	137.9
	Total	196.7

12. WORKING CAPITAL CALCULATION PER MONTH

Sr. No.	Description	Rs. lakhs	Stock Period days	Promoter Margin	Margin Amt.	Bank Finance
1	Salaries and wages	4.8	30	1	4.8	
2	Raw material and packaging material	4.6	30	0.5	2.3	2.3
3	Utilities	1.2	30	0.5	0.6	0.6
4	Creditors	-0.38	30	0.4	-0.152	-0.228
5	Total	10.22			7.548	2.672

13. LIST OF MACHINERY AND THEIR MANUFACTURERS

Sr. No.	Particulars	Rs. lakhs
1	Precooling facility at + 10 degrees centigrade for drumsticks	7.5
2	Stacking trays for drumsticks -each tray holding around 10 kgs of raw material	3.7
3	Preparatory section consisting of washing tank	2.5
4	Steaming and blanching tank	9.2
5	Pulp extractor	3
6	Vacuum drier for dehydrating drumstick at a capacity of 500 kilograms in a span of 8 to 10 hours, complete with vacuum pump, heat exchangers and accessories	24.2
7	Form fill and seal machine with augur weigher and filler	13.7
8	Pin mill with accessories at a grinding capacity of 50 kilograms per hour	27.5

9	Boiler and accessories	19.2
10	Total	110.7
11	Laboratory equipment	5
12	Grand total machinery and equipment	115.7

- Bajaj Processpack Limited
B136, Sector 63,
Noida – 201301
Uttar Pradesh
- Aakanksha Technologies
1561, Sector – 4,
Gurgaon – 122 001

14. PROFITABILITY ANALYSIS

Sr. No.	Particulars	Year 1	Year 2	Year 3	Year 4	Year 5
1	Sales/Gross income	283.5	324	364.5	364.5	364.5
2	Raw materials and other variable costs	44.66	51.04	57.42	57.42	57.42
3	Contribution	238.84	272.96	307.08	307.08	307.08
4	Overheads (except interest)	108.22	123.68	139.14	139.14	139.14
5	Profit before Interest, Depreciation & Tax	130.62	149.28	167.94	167.94	167.94
6	Interest on term loans (11%)	3.92	4.48	5.04	5.04	5.04
7	Profit before depreciation & tax	126.7	144.8	162.9	162.9	162.9
8	Depreciation	11.41	13.04	14.67	14.67	14.67
9	Profit before tax (PBT)	115.29	131.76	148.23	148.23	148.23
10	Income Tax (30%)	34.587	39.528	44.469	44.469	44.469
	Profit After Tax	80.703	92.232	103.761	103.761	103.761

Underlying assumptions for probability calculation are:-

Sales price is taken at 520 per kg, whereas cost of raw material is taken at Rs. 14 per kg.
cost of power is assumed at Rs. 8 per unit, rate of interest on term loan is calculated at 11%.

15. BREAK-EVEN ANALYSIS

Cash Break-Even (as % of Targeted sales)

Sr. No.	Particulars	Value (Rs. In lakhs)
		Year-1

1	Sales Realization (SR)	405
2	Variable costs (VC)	63.8
3	Fixed costs (FC) incl. interest	154.6
4	$BEP = FC/SR-VC \times 100 =$	45.3%

Note: The BEP calculated above is % of respective year's targeted sales level and not of maximum/installed capacity.

16. STATUTORY/ GOVERNMENT APPROVALS

There is specific statutory requirement for Drug & Pharmaceutical products like license from state Food and Drug department. Moreover, MSME & GST registration, IEC Code for Export of end products and local authority clearance may be required for Shops and Establishment, for Fire and Safety requirement and registration for ESI, PF and Labour laws may be required if applicable. Entrepreneur may contact State Pollution Control Board where ever it is applicable.

17. BACKWARD AND FORWARD INTEGRATION

Promoters at appropriate time may think of having their own cultivation of drumstick. This will ensure quality raw material and reduce cost. For forward integration, the formulation of nutraceutical products and building own brand may result in high growth of the enterprise.

18. TRAINING CENTERS/COURSES

For food processing industry training and short-term courses are available at Indian Institute of Food Processing Technology, Thanjavur, Tamil Nadu and Central Food Technological Institute, Mysore, Karnataka&National Institute of Food Technology Entrepreneurship and Management, Sonapat, Haryana.

Udyamimitra portal (link : www.udyamimitra.in) can also be accessed for handholding services viz. application filling / project report preparation, EDP, financial Training, Skill Development, mentoring etc.

Entrepreneurship program helps to run business successfully is also available from Institutes like Entrepreneurship Development Institute of India (EDII) and its affiliates all over India.

Disclaimer:

Only few machine manufacturers are mentioned in the profile, although many machine manufacturers are available in the market. The addresses given for machinery manufacturers have been taken from reliable sources, to the best of knowledge and contacts. However, no responsibility is admitted, in case any inadvertent error or incorrectness is noticed therein. Further the same have been given by way of information only and do not carry any recommendation.