

BLEACHED AND DEHYDRATED GINGER

1. INTRODUCTION

Ginger (*Zingiber officinale* Rosc.) is an important commercial crop grown for its aromatic rhizomes which is used both as a spice and a medicine. Ginger of commerce is the dried rhizome. It is marketed in different forms such as raw ginger, dry ginger, bleached dry ginger, ginger powder, ginger oil, ginger oleoresin, ginger ale, ginger candy, ginger beer, brined ginger, ginger wine, ginger squash, ginger flakes etc. Ginger is the rhizome of *Zingiber officinale* Rosc. a herbaceous perennial belonging to Zingiberaceae, and is believed to be native of south-eastern Asia. It is propagated through rhizomes. The rhizomes put forth erect, leafy stems, 30-90 cm in height. The base of the leaves sheathe the stem. The leaves are dark green, 15-20 cm long, narrow, lanceolate and with a prominent midrib. The flowers are small, yellowish, speckled, each with a purple speckled lip and borne on a spike. When the plants are about 9 months old, the green leaves turn yellow.

Ginger was one of the first of the oriental species to be introduced into Europe and later to the Americas. The first year crop is one of the best quality. Regrowth of inferior and is known as ratoon ginger. There are several forms of ginger. Dried ginger is prepared by drying the peeled roots in the sun. Black ginger is made by boiling the roots in lime water prior to peeling white ginger is made by bleaching the roots. It is a widely grown crop of our country. A genus of rhizomatous herbs distributed in the tropics of the old world, chiefly in India, East Asia and Malaysia. Fourteen, species are reported to occur in India *Z. officinale*, which is the main source of ginger, is cultivated on a large scale in India. The ginger of commerce is prepared from the underground stem or rhizome of *Zingiber officinale* Rosc. It is also used for medicinal purposes. Major ginger-producing areas of the world are India, Malaya, China, West Africa, and the West Indies. Two types of edible gingers are grown, the large type known locally as Chinese ginger and

the small type known as Japanese Ginger. Only the former type is grown to any great extent. Most of the planting areas are in small areas. There are two types of Indian ginger cochin ginger, and Calicut ginger, which comes from Kerala, is the peeled type, light brown to yellowish gray externally and other Calicut ginger, frozen Malabar is orange or reddish. Indian ginger is more starchy and is almost as pungent on Jamaican ginger but is less agreeable in odour. Indian ginger has a faint lemon like odour due to the presence of a small quantity of citral. Indian species logo and Brand promotion market invention and special subsidies are expected to boost-ginger production. Hence ginger cultivation yields good result for new investor and finds the trade is lucrative. The export market is also quite favourable for all these products.

Ginger is the underground stem (rhizome) of a perennial herb, which is used as a spice and as a preserve. The knobby rhizome is dug up when the 1 meter tall leaves and stems of the plant wither, which occurs between 6 and 12 months after planting. It is then prepared for market by either scalding, to produce black ginger, or by scraping and washing to produce white ginger. It is sold in the fresh condition or, more frequently, in a peeled and split dried form. Ginger is utilized widely as a spice, for pickles, candies and as a medicinal herb. It can be produced in many countries but it does best in moist, tropical conditions.

Ginger is a commonly grown culinary item in Uganda. The envisaged project is to set up plant to plant to preserve ginger by bleach-drying it. The ginger is bleached, left to dry and dehydrated for preservation. Preserved ginger has a big market over an extended period. Used in instant masalas, dried ginger is as a sort of a ready mix for all food preparations.

In the pharmaceutical industry, ginger is used for extracting oleoresins. Ginger is widely grown in Uganda and thus this project need not be put in the urban areas alone.

The project can be put up in the rural areas where most of the ginger is grown.

The state of Meghalaya produces substantial quantity of ginger with East-Khasi Hill district producing about 5000 tons annually whereas Jaintia Hills district around 2000 tons. Bulk of ginger is marketed in raw form or dried form and a small quantity is used for making oil. Dry ginger is prepared from the underground shoots or rhizomes of zingiber officinal plant. It is usually prepared by peeling of the outer skin and drying them in sun for about a week. It is also known as unbleached ginger. This is the common practice. But mechanical dehydration increases the production; quality is superior and more hygienic. This is a versatile product and can be produced in many parts of the country but this note considers Meghalaya as the preferred location

2. PRODUCTS AND ITS APPLICATION



Dried ginger has a market as a culinary item in almost all over the world. The market for instant masalas has been growing for some time and supply to restaurants, supermarket chains, etc. Aggressive advertising is needed though all the competition comes from imported products.

3. DESIRED QUALIFICATION FOR PROMOTER

An educational background in science with Botany as main subject would be better. Further specialization in medicinal plants would help.

4. INDUSTRY OUTLOOK/TREND

Fresh and dried ginger, ginger oil and ginger powder are used in large quantities in many vegetarian and non-vegetarian food preparations in Indian, Continental and Chinese cuisine. Ginger also has medicinal attributes and is used in many households as well as by pharmaceutical companies. Bit fresh ginger is available only for about 5-6 months and hence the demand for bleached and dehydrated ginger is increasing.

The Indian herbal medicines market includes OTC, ethical and classical formulations and home remedies of Ayurveda, unani, homeopathy and siddha systems of medicines _ Over the period of 2008 and 2013, the herbal medicine market in the country grew at a CAGR of 26.7%¹. The growth of herbal medicines reflects the shifting trend of consumers from allopathic to herbal medicines

5. MARKET POTENTIAL AND MARKETING ISSUES, IF ANY

The major ginger producing countries are India, China, Nigeria, Indonesia, Bangladesh, Thailand, Philippines, Jamaica etc. It is also grown in Australia, Fiji, Brazil, Sierra Leone and Japan. United Kingdom, United States, Japan and Saudi Arabia import large quantities of ginger. Nigeria ranks first with respect to area under ginger covering about 56.23 % of the total global area followed by India (23.6%), China (4.47%), Indonesia (3.37%) and Bangladesh (2.32%). India ranks first with respect to ginger production contributing about 32.75% of the world's production followed by China (21.41%), Nigeria (12.54%) and Bangladesh (10.80%). Asian countries lead in the supply of ginger in the world market. Japan and USA are the major importers. China has the major export share. India exports mainly in the form of whole and dry ginger. Indian dry ginger is known in the global market as 'Cochin Ginger and 'Calicut Ginger'. Cochin Ginger is considered as one of the best in the world. China, Nigeria and Thailand are competing with India in the recent past in the world market. Australia is the world leader in value added products. India has 50% share in oil and oleoresin trade.

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Marketing Strategy

Manual and sun-drying method is in vogue for dehydration since long, but production is not only limited but quality is also not up to the mark. Hence, mechanically bleached and dehydrated ginger has become very popular. Restaurants, eateries and dhabas, clubs, caterers, food processing industry and pharmaceutical companies are the main consumers. There are very good export markets as well but the contemplated capacity of the project does not warrant this aspect.

6. RAW MATERIAL REQUIREMENTS

The all-important raw material is fresh ginger. Requirement during the season even at 100 % will be 30 tons and procurement should not be a problem at all. Bags made from food grade plastic shall be required for inner packing and large size bags for outer packing.

- *Fresh ginger

- *Lime

- * Polythene

Ginger to be of fresh and good quality

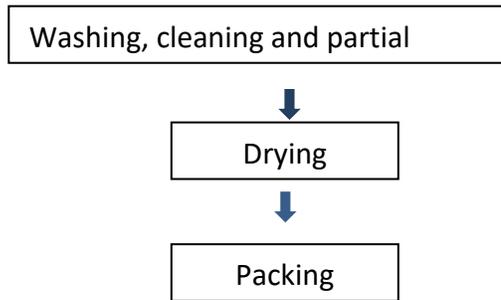
7. MANUFACTURING PROCESS

Fresh ginger is cleaned thoroughly to remove soil and dirt. The outer skin is peeled with the help of a stainless steel knife. The ginger is then washed and soaked in limewater for 12 hours after which it is dried. This process is repeated two or three times to get dried moisture level of 10-12 per cent. The product is then packed in polythene lined gunny bags.

Ginger is washed and cleaned in water and then skin of ginger is peeled partially with the help of peeling machine. It is then dried in electrically operated tray drier at a temperature

of about 60°C. Even if ginger is to be used for extraction purposes, this temperature is advisable as oil contents in ginger are not affected till 80°C. Drying time is 24 hours in cross-flow type drier and 14 hours in through-flow drier. Dried ginger slices are packed in polythene bags and sealed. Average yield after drying is around 25%.

CFTRI, Mysore, has developed the technical know-how successfully. The process flow chart is as under:



8. MANPOWER REQUIREMENT

Sr. No	Particulars	Nos	Monthly Salary (Rs.)	Total Monthly Salary (Rs.)
1	Skilled Workers	1	4000	4000
2	Semi-skilled Worker	1	2000	2000
3	Helpers	2	1500	3000
4	Salesman	1	3000	3000
Total				12,000

9. IMPLEMENTATION SCHEDULE

Sr. No	Activity	Time
1	Preparation of Project profile	
2	E M Registration & approval from Director of Ayurveda	One month
3	Financial/Loan from Banker or Financial Institutions	Two months
4	Power connection/Building construction Six months	One month
5	Machinery procurement & Trial run.	Two months
6	Recruitment of Staff & Labour	One month
7	Actual commercial production	One month

10. COST OF THE PROJECT AND

Sr. No	Particulars	Amount (Rs.in Lacs)
1	Building	2.00
2	Machinery	1.90
3	Miscellaneous Assets	0.40
4	P&P Expenses	0.60
5	Contingencies @ 10% on Land and Building and Plant & Machinery	0.40
6	Working Capital Margin	1.00
	Total	6.30

11. MEANS OF FINANCING

Sr. No.	Means of Finance	Rs. In Lakhs
1	Promoters' Contribution	1.60
2	Term Loan from Bank/FI	4.70
	Total	6.30

12. WORKING CAPITAL CALCULATION

The proposed project will have working capital requirement of Rs.3.00 lacs and based on current funding norms of schedule banks considering 30% margin of the promoters, the

proposed project will have working capital margin of Rs.1.00 lac and borrowing of Rs. 2.00 lacs. This requirement is indicative and may change as per funding norms of funding banks/agencies.

13. LIST OF MACHINERY REQUIRED& SOURCES

Rated processing capacity of 20 tons per month is suggested considering 1 shift working and production for only 6 months during the year. This would require following set of equipments:

Sr. No	Item	Qty.	Price (Rs.)
1	Ginger Peeling Machine	1	50000
2	Electrically-operated Tray Drier-48 trays	1	90000
3	Weighing-scales, sealing machine, etc.	--	30000
4	Washing Tank	1	20000
		Total	1,90,000

Indicative Sources:

- Pharmatech Engineers,
Indore
Madhya Pradesh
- Ambica Machineries,
Vatva, Ahmedabad
Gujarat
- ARV Engineering,
Thane,
Maharashtra

14. PROFITABILITY CALCULATIONS

8.1 Production Capacity & Build-up

The rated capacity is 20 tonnes per month and the plant would be operated for 6 months. The promoters may use it for some other fruits or vegetables but this note does not account for any such activity. Capacity Utilisation in the first year is taken as 60% and thereafter it is limited to 75%.

8.2 Sales Revenue at 100%

Assuming selling price Rs. 1, 00,000/- per ton, sales revenue at 100% for six months will be Rs. 120.00 lacs.

Profitability projections (Rs. Lacs)

Sr. No	Particular	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5
1	Capacity utilisation (%)	60	70	75	75	75
2	Sales	72.00	84.00	90.00	90.00	90.00
3	Expenses	57.60	67.20	72.00	72.00	72.00
4	Gross profit	14.40	16.80	18.00	18.00	18.00
5	Profit to Sales (%)	18.00	20.00	21.00	21.00	21.00

Note: The profitability basis and projections are indicative and on approximate basis only.

15. BREAKEVEN ANALYSIS

$$FC \times 100: 11.00 \times 100 = 1100$$

$$FC + Profit : 12.00 + 9.00 =$$

$$BEP = 52.00 \%$$

16. STATUTORY/ GOVERNMENT APPROVALS

Generally quality of Ayurvedic products is fully dependent on the quality of raw materials and process of manufacture. The quality control process of some Ayurvedic formulations can be contained from 'Pharmacopica Laboratory of India Medicine, near ALTC, Ghaziabad (U.P)'. The products are to be manufactured as per Indian system of medicines of Ministry of Health.

Schedule "T" is to be followed as per Food & Drugs Administration norms. 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 and also Approval from Pollution Control Board.

17. BACKWARD AND FORWARD INTEGRATION

As forward integration, Entrepreneur may think of going for the production of newer dosage forms.

18. TRAINING CENTERS/COURSES

For Ayurvedic & allied industry training and short term courses may be availed from the Institutions of Aurvedic Research & Education in respective states. Also EDP centers. 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.

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.