MEDICINAL HERBS EXTRACTION PLANT

1. INTRODUCTION

Medical herbs and Aromatic plants (MAPs)

- Medicinal herbs have curative powers and are used in making medicines because of their healing properties as a result of containing active ingredients. They are also used as natural flavouring agents, cosmetic ingredients, etc.
- Herbal material such as gums, fixed oils, essential oils, resins extracts, etc. are also extracted from plants and used separately. These materials are processed by various local procedures, such as steaming, roasting, or stir baking with honey/ alcoholic beverages/ other materials.
- There is a renewed interest in MAPs, especially in developing countries, for application in pharmaceutical, nutrition, perfumery and cosmetic fields.
- Medicinal herbs are widely used as diet supplements and treating illness like valerian. The finished products can be in form of oil, powder, paste or aqueous solutions from extracted herbs.
- The adoption of medical herbs increasing globally
- In Germany, ~ 700 plant based medicines are available, which prescribed by ~70% of German physicians
- ~2,100 plant species globally have the potential for being used as medical plants and it has been estimated, that in development countries such as the US, plant drugs constitute as much as 25% of the total drugs, while in fast developing countries such as India and China, the contribution is as much as 80%

2. PRODUCTS AND ITS APPLICATION

The project envisages setting up of **Medicinal Herbs Extraction Unit** based on the raw material strength of Gujarat. The manufacturing unit can focus on production, processing, marketing, exports, etc.

Depending upon their properties, MAPs are used in different industrial sector

Purpose	Type of product	Uses
Pharmacological activity	Pulverised plants	Phytotherapy
	Simple extracts	Homeopath
	Essential oils	Aromatherapy
	Isolated active ingredients	Preparation of medicines
	Pulverised plants	Models for synthesis
		Molecules for semi-synthesis
	Essential oils	Nutritional complements
Raw materials for industrial use	Extracts	Foodstuffs
	Isolated products	Perfumes
		Cosmetics

Source: University of Maryland Medical Centre, National Health Portal India

3. DESIRED QUALIFICATION FOR PROMOTER

The promotor should graduate or post graduate with a maximum qualification of M.Sc. or MBA

4. INDUSTRY OUTLOOK AND TREND

Global as well as domestic herbal trade outlook is very encouraging showing high growth trends. Global trade is expected to touch USD 7 trillion by 2050 from USD 120 billion in 2016. Indian medicinal herbs exports have grown at 28% CAGR during last five years. Increasing awareness about adverse effect of synthetic drugs has boosted demand of medicinal herbs.

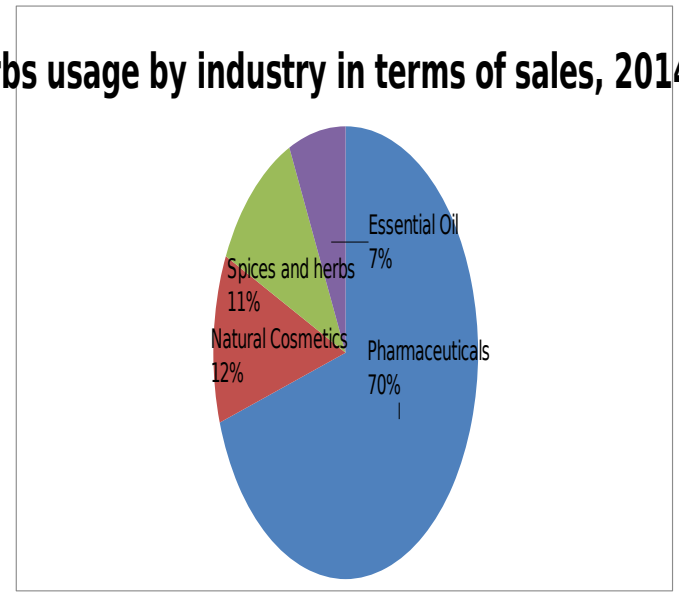
5. MARKET POTENTIAL AND MARKETING ISSUES, IF ANY

Global market:

- The global herbal trade stands at USD120 billion and is expected to reach USD7 trillion by 2050.
- About 80% of the world population is dependent on medicinal plants for health care and 20% of the pharma drugs are of plant origin, either extracted from the plants or synthetic derivatives of these plant species.
- Despite a steady performance of MAP sector over the years, India's share in the world herbal export is insignificant (1.6%) and 2/3rd of it is in the form of raw herbs.
- Global market for MAPs is largely dominated by China, Japan, France, Germany, Italy, Spain, UK and US.
- Herbal drugs are used in cardio vascular (27%), respiratory (15.3%), digestive (14.4%), hypnotics and sedatives (9.3%), miscellaneous (12%).

Medicinal plant export varieties:

- As dried plants or plant parts. e.g. liquorice roots
- As extracts e.g. sag of opium poppy
- As isolated and purified active ingredients/ intermediates e.g. Gymnema powder
- As Ayurvedic, Unani, Siddh, and homeopathic formulations e.g. Over the counter (OTC) drugs, and range of proprietary formulations. This also includes range of herbal cosmetic products.



Source: Indian Council of Agricultural Research, July 2015

Indian Medicinal Herbs Market:

India has large biodiversity and is endowed with 45,000 plant species out of which about 15,000-20,000 plants are known to have medicinal properties.

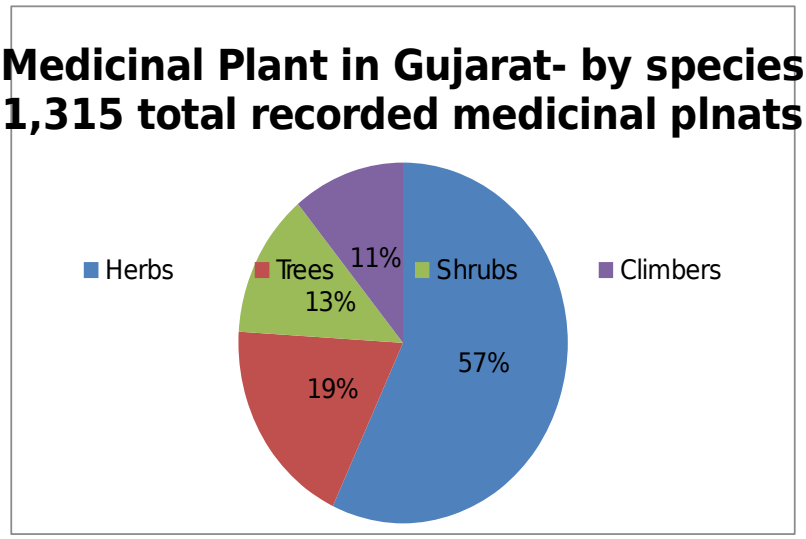
With a share 46.4%, the US is the largest importer of medicinal herbs value added products from India in 2013. Other top importer countries include Pakistan and Germany.

Gujarat – Competitive Advantage

Gujarat has a major contribution towards the country's biodiversity

- Despite, its adverse geo-climatic conditions, the state has a remarkable diversity of plant species owing to its four bio-geographic zones and five biotic provinces
- Out of 16 forest types found in India, 4 are present in Gujarat
- Gujarat contains four out of the ten biogeographic zones in India and covers six major
  Ecosystems

- In the state, there are ~4,320 plant species and medicinal flora forms a major component of this biodiversity. The state has 1,315 recorded species of medicinal value. Around 1016 plant species are wild whereas 299 species are being under cultivation or plantation. Out of all these 102 species are of conservation-concern and 76 are naturally rare



Major medicinal plants available in Gujarat include Ashwagandha, Bel, Ghrit kumara, Gugulu, Isabgol, Jeevanti, Kounch, Neem, Safed-musli, Sankhapushpi, Senna or Sonamukhi and Shatavari

Medicinal Plants available in Gujarat

Ardusi/ Adusi

Adhatoda

Bel

Aegle marmelous

Neem

Azadirachta indica

Saraswati

Centella asiatica

Guggal

Commiphora wightii

Shatavari

Asparagus racemosus

Ashwagandha

Withania somnifera

Sr. No.	Common Name	Botanical Name
1	Ghrit kumari	Aloe vera
2	Isabgol	Plantago ovata
3	Jeevanti	Leptidinea reticulata
4	Kounch	Mucuna pruriens
5	Safed-musli	hlorophytum borivillianum
6	Sankhapushpi	Evolvulus Asinoides

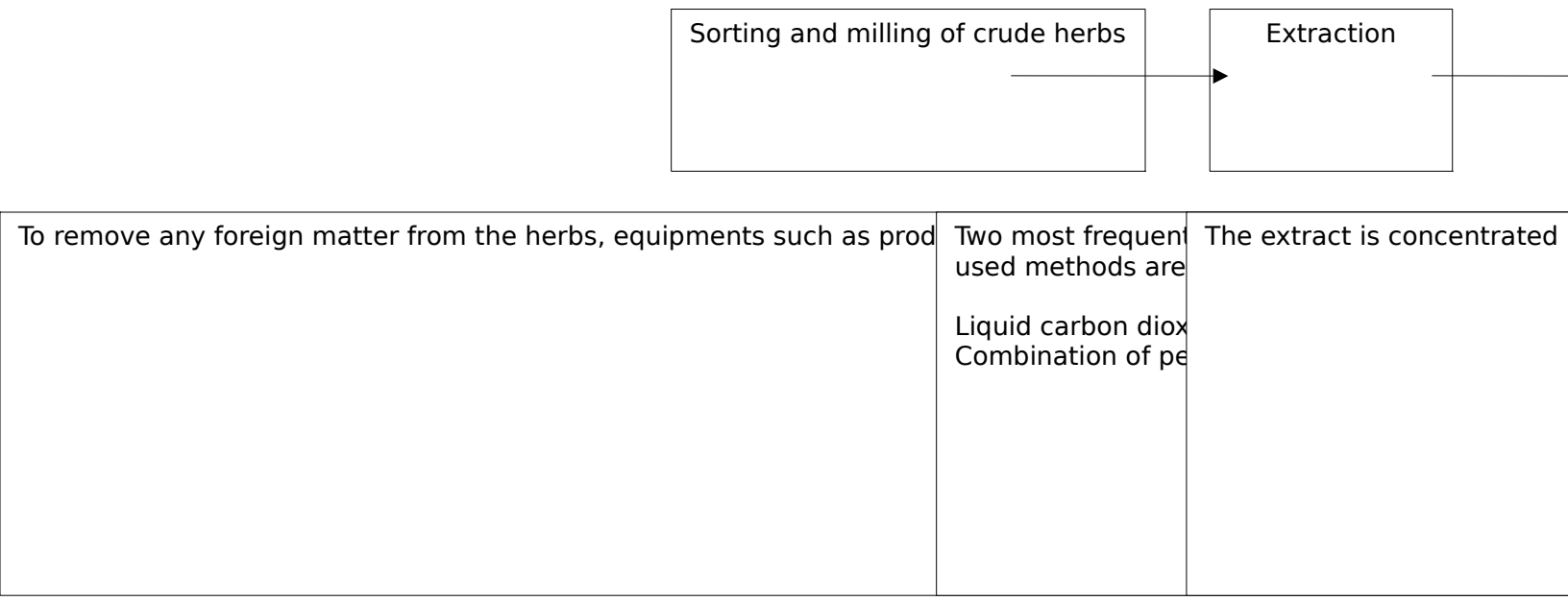
6. RAW MATERIAL REQUIREMENTS

Medicinal herbs in Gujarat are both cultivated and naturally growing. Herbs are either collected from the forests of Gujarat by Gujarat Forest Corporation, or traders collect herbs form tribal. Gujarat's herbal market is estimated at 50k – 70k MT, out of which ~50% is processed per annum.

The herbs are sorted individually to remove any foreign matter. They are milled to 80 mesh size depending upon the nature for the product huller, disintegrator, pulveriser, etc. are used.

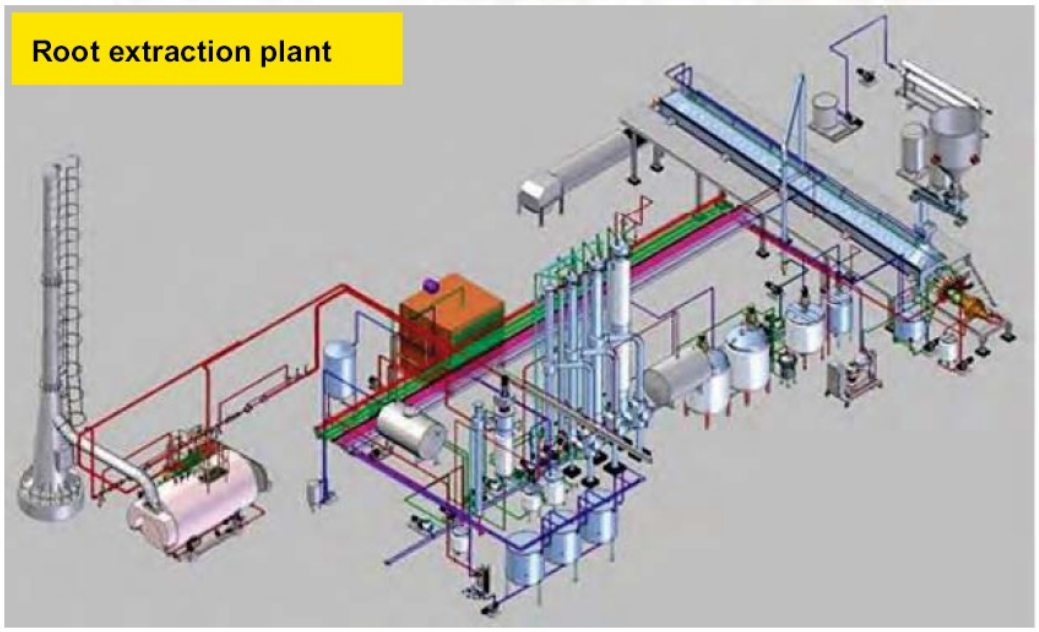
7. MANUFACTURING PROCESS

1. Production process



2. Herbal Exaction Process

3. Root Extraction Plant



8. MANPOWER REQUIREMENT

Manpower

Sr. No.	Particulars	Nos.	Rs.
1	General Manager	1	15,900
2	Sales Staff	1	11,660
3	Supervisor Production	2	25,440
4	Skilled workers	2	21,200
5	Semi-skilled workers	3	25,440
6	Accountant	1	10,600
7	Clerk cum personal asst.	2	21,200
8	Peon/Watch man	2	16,960
9	Perquisite @15%		22,260
	Total		1,70,660

9. IMPLEMENTATION SCHEDULE

It is estimated that it takes 5-6 months for the implementation of the project. The implementation model includes below nine steps –

Implementation Schedule

Sr. No.	Particulars	Time
1	Selection of site	One month
2	Preparation of the project profile	Two weeks
3	Registration of the unit with Directorate of Industries	Two Days
4	NOC from Pollution Control Board	1 week
5	Calling quotation and preparation of detailed project report	One month
6	Approach to commercial bank	One month
7	Installation and electrification of machinery and equipment	Two Weeks
8	Recruitment of staff	One month
9	Arrangement of raw material and packaging material	Two Weeks

Basis and Presumption

Sr. No.	Particulars	Units
1	No. of working shift in a day	Two
2	No. of working days in an year	330
3	Motive Power	20 KWH
4	Land and building (covered and uncovered area)	1200 sq. m
5	Cost of installation/electrification as % of the cost of machinery and equipment	10%

10. COST OF PROJECT

Project components & specifications	
Product	Medicinal plants extraction unit
Quality standard	As per Ayurvedic standards
Production capacity	22 MT

Cost break-up (INR)		
Fixed Capital	Land and building	On rent
	Machinery and Equipments	43,46,000
Working Capital	Utilities (electricity charges 4,500 units @ Rs. 5.00,	31,800

(per month)	fuel, water		
	Rent		26,500
	Other expenses (Power, rent, water, utilities etc.)		47,700
Working capital (per month)	Raw material	Herbs (Guggal, Onion and Cardamom)	21,20,000
		Dextrine	79,500
		Activated Charcoal	1,590
		Amonia	12,720
		Glacial Acetic Acid	63,600
		Chemicals (Methanol, Ethanol, Toluene, etc.)	2,66,590
		Total	69,96,000

Approximately 3.5 years of payback period is expected

Source: Micro Small Medium Enterprises Development Institute

11. MEANS OF FINANCE

Sr. No.	Particulars	Amount
1	Own fund 30%	20,98,800
2	Bank Loan 70%	48,97,200
	Total	**69,96,000**

12. WORKING CAPITAL CALCULATION

Sr. No.	Particulars	Amount
1	Fixed Capital (Machinery and Equipments) in INR	43,46,000
2	Working capital for 3 months in INR	84,61,980
	Total capital investment in INR	**1,28,07,980**

Source: Micro Small Medium Enterprises Development Institute study Delhi govt. av. Inflation rate used for the calculations (2014-16) is 6%.

13. LIST OF MACHINERY REQUIRED

Sr. No.	Particulars
1	Hammer mill with dust extraction system of (100kg/hr.) with 5H.P. electric motor
2	SS Vertical Extractor (5k litre capacity) with 5H.P. electric motor
3	Horizontal Extractor (5k litre capacity)) with 5H.P. electric motor
4	Nutsche filter with 2H.P. electric motor
5	S.S. Cylindrical tanks for storage
6	Portable Mechanical sifter of 22 inch dia with 2H.P electric motor
7	Portable Dehumidifier, 2HP motor
8	Lab. Equipments like HPTLC, Microscope, Refractometer, pH meter etc.
9	Process pump sets, 2H.P electric motor
10	DM Water plant of 1000 LPH
11	Boiler (300 kgs/hrs)
12	HDPE storage tanks
13	Tray dryer, Vacuum dryer (32 trayes) each
14	Digital balance 100 Kgs.

Illustrative and indicative list of machinery suppliers is given below.

- Acmas Technologies Pvt. Ltd. Delhi
- Cethar Limited, trichy
- Kg Khosla Enterprises, Faridabad
- Techno Process Equipments
- Voltas Limited Chennai

Key considerations

The proposed project is for medicinal herbs extraction and has domestic and export market in advance countries like USA, Canada, Europe, Japan and CIS countries. The unit will require to get register their product with Food and Drugs Administration (FDA) in these countries, apart from registration with Indian and state food and drugs administration. Strict quality standards to be followed to being an export oriented unit.

14. PROFITABILITY CALCULATIONS

Profitability over Five years

(Rs.)

Sr. No.	Particulars	Year 1	Year 2	Year 3	Year 4	Year 5
1	Estimated sales per year	28196000	32224000	36252000	36252000	36252000
2	Cost of production	23693544	27078336	30463128	30463128	30463128
3	Profit Before depreciation, interest and tax	4502456	5145664	5788872	5788872	5788872
4	Depreciation	341320	390080	438840	438840	438840
5	profit before interest and tax	4161136	4755584	5350032	5350032	5350032
6	Interest on term loan 11%	538692	461736	384780	307824	230868
7	profit before tax	3622444	4293848	4965252	5042208	5119164
8	Income tax (30%)	1086733	1288154	1489576	1512662	1535749
9	Profit after Tax	2535711	3005694	3475676	3529546	3583415

Underlying assumptions for probability calculation are:-

Sales price is taken at the rate of 1600 to 1800 per kg. The cost of raw material is taken at the rate of 1300 to 1400 per kg. cost of power is taken at Rs. 8 per unit. The interest is calculated at 11% on long term loan.

15. BREAKEVEN ANALYSIS

Particulars		Amount
Fixed cost in INR (per annum)	Rent	3,18,000
	Total depreciation	4,87,600
	40% of staff & labour	8,19,168
	40% of other expenses	2,18,784
	Insurance	25,440
	Interest on total capital investment @ 15%	19,21,197
Total Fixed cost per year		37,90,189

Breakeven point {Fixed cost/(fixed cost + Profit)*100}	48.5%

Source: Micro Small Medium Enterprises Development Institute study Delhi govt; av. Inflation rate used for the calculations (2014-16) is 6%.

16. STATUTORY/GOVERNMENT APPROVALS

IEM registration with Secretariat of Industrial Approval (SIA). Ministry of Industry, Govt. of India required. Clearance from state Food & Drugs Administration is also required. For export DGFT, chemexcil registration is a must. Entrepreneur may contact State Pollution Control Board where ever it is applicable.

17. BACKWARD & FORWARD LINKAGES

There are no immediate backward or forward opportunities rendering techno – commercial advantages or strategies.

18. TRAINING CENTRE AND COURSES:

NRDC, Central Institute of Medicinal and Aromatic Plants and Central Drug Research Institute(CDRI) are important source of technology collaboration and technical training.

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.

Source:- Udyami Mitra/Sidbi