A REVIEW

FOOD SCIENCE
RESEARCH JOURNAL

e ISSN-2230-9403 ■ Visit us :
www.researchjournal.co.in
Volume 8 | Issue 2 | October, 2017 | 416-420
DOI : 10.15740/HAS/FSRJ/8.2/416-420

Processing of medicinal plants for entrepreneurship development among rural youth

MONIKA CHOUDHARY

India is gifted with 8000 medicinal and 2500 aromatic herbs, many of which can be mined for natural chemicals and processed for commercial products with export value. Herbs are beneficial for human health as it contains significant amount of micronutrients, vitamins, antioxidants, phytochemicals and fibre content that may help protect against degenerative diseases and micronutrient malnutrition. Still, herbs are considered as alternative medicine and primary source of health care for 80 per cent of the world. Popular fresh herbs include basil, chives, cilantro/coriander, dill, mint, parsley, rosemary, and lemongrass. Product prepared from herbs can be fresh, dried whole or ground, oleoresins and steam distilled oils. Growing demand for products derived from medicinal and aromatic herbs across the world have opened up entrepreneurial opportunities to process these herbs for value added products. Large and small scale value addition through processing can be done by unskilled rural youth and unemployed, educated urban youth. The variety in value addition allows the small-scale farmer to potentially have a diverse portfolio of products that derive from the same crop and so not only have more marketing flexibility, but also more chances of earning income from the diverse products. So, the present paper has been structured to highlight the opportunities in this industry for young, innovative entrepreneurs and farmers for commencing successful, eco-friendly and natural product small scale enterprises.

Key Words : Medicinal plants, Value addition, Entrepreneurship, Farming

How to cite this article : Choudhary, Monika (2017). Processing of medicinal plants for entrepreneurship development among rural youth. *Food Sci. Res. J.,* **8**(2): 416-420, **DOI : 10.15740/HAS/FSRJ/8.2/416-420**.

INTRODUCTION

India is sitting on a treasure of 8000 medicinal and 2500 aromatic plants. In the last 50 years, Central and State Government research organizations have developed several technologies for utilizing herbs and medicinal plants (Gupta *et al.*, 2012). Many culinary herb plants are widely regarded as having medicinal properties, and there is therefore some overlap between them and medicinal aromatic plants (Winston, 1999). Around fifty spice and herb plants are of global trade importance, but many other spices and herbs crops are used in traditional cooking, healthcare, or other applications, in particular regions and traded locally (Shelef, 1984 and Suppakul *et al.*, 2003). Herbs are grown as trees, shrubs, perennials, annuals, wild and cultivated. The utilizable parts of herb plants are seeds and fruits, leaves and stems, flowers and buds, roots and rhizomes, bark and resins which can be used for commercial purpose (Lai and Roy, 2004).

AUTHOR FOR CORRESPONDENCE

MONIKA CHOUDHARY, Krishi Vigyan Kendra (P.A.U.), SANGRUR (PUNJAB) INDIA
Email : moni0986@gmail.com

Health benefits :

Research has shown that herbs are beneficial for human health as it contains significant amount of micronutrients, vitamins, antioxidants, phytochemicals and fibre content that may help protect against degenerative diseases and micronutrient malnutrition (Kaefer and Milner, 2008). The medicinal attributes of herbs form the basis of traditional healthcare. For example, rosemary is used to treat headaches, poor circulation and as a

natural breath freshener. Bay leaves can be made into an infusion to relieve flatulence and bloating and to help with arthritis. African basil can be drunk as a refreshing tea and is used to treat diabetes, as an expectorant to clear throat and lungs, and as a mosquito repellent (Prakash and Gupta, 2005). Antioxidants are found in many herbs which can contribute to the body's defence against cardiovascular disease and intestinal cancers (Tapsell *et al.,* 2006 and Kaefer and Milner, 2008). Examples include ginger, which is widely used for digestive problems; and fenugreek and garlic, which may help lower cholesterol levels. Potential health benefits and uses of some herbs have been summarized in the Table 1 (Winterhalter, 2012).

Livelihood scope :

Herbs can be incorporated easily into the scaffold of many small-scale farmers' households. These can be cultivated in close proximity to the farmhouse, in either home or gardens (Lee, 2000). Culinary herbs require a relatively small area to produce commercial crops, and provide an appealing nutritional improvement in food. Besides, post-harvest handling at small-scale is also simple enough and does not require any multifarious manoeuvre. For instance, fresh herbs can be sold in local markets which may provide an additional income to the family. Moreover value added processed products can also be developed at this level – condiments, pastes, etc. with potential to enlarge the enterprise (Lee, 2000 and FAO, 2011).

There is good trade potential for small-scale farmers where growing conditions are favourable and demand for herbs is also high in local market. As, herbs are sold at higher value comparatively and are low volume cash crops, farmers can make their endeavours in this venture so as to enhance their income and thus improve their livelihoods (Lee, 2000). A large proportion of spices and herbs traded in both local and export markets are produced by small-scale farmers, and world markets for herbs, particularly in industrializing countries and in local markets, are growing and thus, can offer good returns to small-scale farmers (FAO, 1995).

In recent years fresh herbs have become popular and are supposed to be of higher quality. Besides, essential oils derived from herbs are sold in abundance (Jack, 2006). Herb plants do not require large land areas for profitable cultivation and can also be gathered from the wild. Moreover, in case of cultivation, growing can be achieved without excessive investments as many herb plants can be produced with minimum financial inputs, labour and land. These are often an ideal crop to be integrated into small-scale farming systems and are suitable for smaller garden production. So, farming of herb crops can provide financial benefit to complement household income and may improve livelihoods (Jack, 2006 and Schirley *et al.*, 2009).

Processing and value addition :

There is also a positive prospective for on –farm small-scale processing through higher income from the sale of processed spices and herbs can be achieved. Herb products can be fresh, dried whole or ground, oleoresins and steam distilled oils. This diversity allows the small-scale farmer to have a varied collection of products and create more chances of earning income from the diverse products (FAO, 2005).

Fresh herbs :

Fresh cut herbs are popular at the upper end of the retail and catering markets in many developing countries. Fresh herbs require less post-harvest processing and can be washed by customers to reduce microbial contamination (Rubió *et al.*, 2013 and FAO, 1999). Exporting of fresh herbs demands a high standard of cold-chain management. Popular fresh herbs include basil, chives, cilantro/coriander, dill, mint, parsley, rosemary, and lemongrass. Fresh herbs and spices are also processed into paste and powder form e.g. basil, coriander, garlic and ginger (FAO, 1999).

Oils and oleoresins :

Steam distilled essential oils from aromatic herbaceous crops are used in a multitude of products - in foods, healthcare, personal hygiene, household fragrances and perfumes. Essential oil production can be achieved with reasonable levels of investment and simple technologies that are easy to use and install in rural settings with appropriate technical training and support (FAO, 1999). Oleoresins are produced by solvent extraction of flavour compounds, which are macerated in a solvent and the solvent evaporated under vacuum, leaving a flavour concentrate (Rubió *et al.*, 2013 and FAO, 1999).

Value addition :

Secondary processing enterprise opportunities can assist in stabilizing values by creating a non commodity product (FAO, 2011). The ability to innovate, produce new or enhanced products will improve the sustainability of the business. Opportunities for further processing and value adding include: Food flavours, powdered blends, pastes such as garlic puree or as oils Condiments - basil pesto, mustards, cosmetics, herbal teas, and personal hygiene products such as scented soaps or mint mouthwash, medicinal, aromatherapy oils (Suppakul *et al*., 2003 and FAO, 1995).

Market prospective :

Cuisines :

Food service outlets (institutions, hospitals, restaurants, etc.) offer the potential for larger bulk sales of fresh and dried products. It is unlikely that small-scale

Table 1 : Potential health benefits and uses of some herbs

Herbs and spices	Description	Health benefits	Uses
Cinnamon	Cinnamon is the dried inner bark of various evergreen trees belonging to the genus *Cinnamomum*. At harvest, the bark is stripped off and put in the sun, where it curls into the familiar form called "quills."	Inconclusive evidence to support blood glucose lowering in patients with diabetes	Sprinkle on fruits, oatmeal, and yogurt Used in baked goodies and desserts
Red pepper	Red Pepper is the dried, ripened fruit pod of *Capsicum frutescens*, one of the most pungent capsicums. It is sometimes referred to as Cayenne Red Pepper.	Likely effective in pain relief when applied topically. Possibly effective in treating back pain, cluster headache, fibromyalgia, seasonal allergies, and prurigo nodularis (a skin disease)	Creates heat and bite to seasoning blends, meats, pickles, seafood, Italian, Indian, Mexican, and Caribbean cuisines
Ginger	Ginger is the dried knobby shaped root of the perennial herb *Zingiber officinale*. Once the leaves of the plant die, the thick roots, about 6 inches long, are dug up and sold as ginger root.	Possibly effective in treating painful menstruation, morning sickness, osteoarthritis, post-op nausea and vomiting, and vertigo Inconclusive evidence to support chemotherapy-induced nausea and vomiting, migraine headache, myalgia, and rheumatoid arthritis	Used in Indian curries, and Chinese, Japanese, and European spice blends. Used in popular baked goods including ginger bread and ginger snap cookies Ginger Ale, a sweetened beverage refreshment Often accompanies sushi to clean the palate
Garlic	*Allium sativum*, commonly known as garlic, is a species in the onion genus. The plant is part of the lily family that produces a pungent, strong-smelling garlic bulb.	Possibly effective in treating atherosclerosis, colorectal cancer, gastric cancer, hypertension, tick bites, and a variety of skin conditions if used topically (ringworm, jock itch, and athlete's foot).	Sauté with vegetables Used in Italian pastas and dishes Added to marinades, sauces and dressings Used for garlic butter to make garlic bread
Rosemary	Rosemary is the dried leaves of the evergreen *Rosmarinus officinalis*. Rosemary leaves are slightly curved, resembling miniature curved pine needles. Normally hand harvested, the Rosemary plant grows about 2 to 3 feet tall and is very hardy as it grows under harsh mountainous conditions.	Possibly effective in treating alopecia (hair loss).	Used in seasoning blends for lamb and Mediterranean cuisines. Sprinkle over ice cream and mousses Use sprigs for roasting, grilling or on the barbeque Mix with orange to create a sweet glaze Cook with potatoes and other vegetables
Oregano	Curcumin (also referred to as turmeric) is derived from dried rhizomes of the herb *Curecuma longa*. Curcumin is a member of the ginger family and is a polyphenol.	Possibly effective in treating indigestion and osteoarthritis.	Often an important ingredient in curry mixes Add a pinch to jazz up egg salad Used in many Moroccan dishes Pairs well with chicken, duck, turkey, vegetables, rice, and salad dressings

farmers will have the ability to access these markets directly but this may be achieved through a trader or wholesaler. This type of market can be accessed directly by small scale farmers and may have more success in well managed groups in order to be able to deliver the quantity and quality (FAO, 2011 and Jack, 2006).

Industrial market :

This market is large and encompasses food and beverage manufacture, personal hygiene products, cosmetics, medicinal and household fragrance products. Customers may range in size from small household processors, local agribusinesses to large national producers and multinational processors (Lee, 2000 and FAO, 2011). However as in catering markets small-scale farmers will have difficulty in access if they are alone and joining a farmers' marketing association may be a viable option for accessing such markets. However, these markets may have rigorous quality controls, and small-scale farmers will require support and training which can be either provided by the buying company, under contract farming agreements, or may need to be provided by extension services (FAO, 2005 and FAO, 1999).

Export :

A product intended for export is usually produced in a more formal and shorter supply chain organized by marketing companies with links in export markets. The farmer will grow the crop under contract and is generally assured a minimum return and is given technical support and training in cultivation of the required product (Schirley *et al.,* 2009).

Main challenges in enterprise sustainability (Jack, 2006; FAO, 2011) :

The main challenges which could affect the long term success of a venture are:

– Cultivation practices need to be sustainable and avoid degradation of the soil.

– The community opting for this venture must have sufficient diversity to allow food security if a cash crop fails.

– Climate change affects regional growing conditions.

– Side buying practices of farmers already under contract makes profitability difficult for contract buyers and may drive them out of the market. A structured formal supply chain is required to sustain the enterprise.

– Failure to deliver good quality, reliable and on time products.

– Inability to adapt to competition and market changes removing profitability from the enterprise.

Conclusion :

Worldwide consumer preference for natural products in flavouring, pharmaceutical and many other industries has created tremendous potential for natural products from herbs and medicinal plants. To meet this demand, technologies for post harvest processing and value addition have been developed for commercial utilization by small and medium enterprises. So, India with its favourable climatic conditions for cultivation offers an abundant natural wealth of herbs which may help creating an excellent scope for establishing enterprises at rural as well as urban centres.

LITERATURE CITED

FAO (1995). Quality assurance for small-scale rural industries, FAO Agricultural Services Bulletin No. 117, Rome.

FAO (1999). The use of spices and medicinal as bio protective protectants for grains, FAO Agricultural Services Bulletin No. 137, Rome.

FAO (2005). Herbs, spices and essential oils: post-harvest operations in developing countries, by M. Douglas, J. Heyes & B. Smallfield, Rome.

FAO (2011). Processing for prosperity, Second edition, FAO Diversification booklet No. 5, Rome.

FAO (2011). Value from village processing, Second edition, FAO Diversification booklet No. 4, Rome.

Gupta, E., Sinha, J. and Dubey, R.P. (2012). Utilization of dehydrated herbs in the formulation of value added snack "rice flakes mix". *J. Food Process. Technol.,* S1-002. doi:10.4172/2157-7110.S1-002

Kaefer, C.M. and Milner, J.A. (2008). The role of herbs and spices in cancer prevention. *J. Nutr. Biochem.,* **19** : 347-361.

Lai, P.K. and Roy, J. (2004). Antimicrobial and chemopreventive properties of herbs and spices. *Curr. Med. Chem.,* **11**: 1451-1460.

Lee, K.H. (2000). Research and future trends in the pharmaceutical development of medicinal herbs from Chinese medicine. *Public Health Nutr.,* **3**: 515-522.

Prakash, P. and Gupta, N. (2005). Therapeutic use of *Ocimum*

sanctum Linn (*Tulsi*) with a note on eugenol and its pharmacological actions: a short review. *Indian J. Physiol. Pharmacol.*, **49**: 125-131.

Rubió, L., Motilva, M.J. and Romero, M.P. (2013). Recent advances in biologically active compounds in herbs and spices: a review of the most effective antioxidant and anti-inflammatory active principles. *Crit. Rev. Food Sci. Nutr.*, **53**(9): 943-953.

Schirley, T., Ayieko, M., Hichaabwa, M., Goeb, J. and Loescher, W. (2009). Modernizing Africa's fresh produce supply chains without rapid supermarket takeover: Towards a definition of research and investment priorities, The Michigan State University (MSU) International Development Paper series.

Shelef, L.A. (1984). Antimicrobial Effects of Spices. *J. Food Safety* , **6** : 29-44.

Suppakul, P., Miltz, J., Sonneveld, K. and Bigger, S.W. (2003). Antimicrobial properties of basil and its possible application in food packaging. *J. Agric. Food Chem.*, **51**: 3197-3207.

Tapsell, L.C., Hemphill, I., Cobiac, L., Patch, C.S., Sullivan, D.R., Fenech, M., Roodenrys, S., Keogh, J.B., Clifton, P.M., Williams, P.G., Fazio, V.A. and Inge, K.E. (2006). Health Benefits of Herbs and Spices: The Past, the Present, the Future. *Medical J. Australia*, **185**(4 Suppl):S4-S24.

Winston, J.C. (1999). Health-promoting properties of common herbs. *Am. J. Clin. Nutr.*, **70**: 491-499.

WEBLIOGRAPHY

Jack, M. (2006). Marketing Manual and Web Directory for Organic Spices, Culinary Herbs and Essential Oils, 2nd Ed., International Trade Centre (ITC); (Available at http:/ /organicconsultants.org/uploader/

Winterhalter, J. (2012). Exploring the Health Benefits of Spices and Herbs. *Sports, Cardiovascular, and Wellness Nutrition, http://www.scandpg.org*

Received : *01.07.2017;* **Accepted :** *25.09.2017*