

Dehydration of onion and garlic essay sample

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1. 1 BACKGROUND :

Dehydrated onions and Garlic are marketed in different forms like chopped, kibbled, minced, granules and powder for the domestic and export markets. The product is also marketed in the form of toasted slices processed in hot air closed continuous system that preserves the natural integrity of the product without any loss of flavour, colour and aroma. The food processing sector has recorded spectacular progress since 1990. The output of processed food industry is estimated to be Rs. 25000 crores per year with demand growth rate of around 10% per annum. On a rough estimate around 20% of all processed food items utilise upto 5% Onion & Garlic powder. In terms of demand statistics this means increased requirement of both these products from food processing alone. Use of Garlic powder in drug & pharmaceutical industry as pills, pearls and capsules also adds to the overall demand. Growth of drug industry has been around 27% to 30% since last many years.

1. 2 THE PROPOSED DEHYDRATION UNIT :

Keeping in view, the continuous increase in the demand of these important food and pharma ingredients, the promoter of this venture have identified a rural location at a village Soundane, Taluk Malegaon in the Nasik Dist of Maharashtra. Apart from being in the proximity of urban cities like Nasik, Pune and Mumbai, the location is also strategically located near the industrial hub of New Mumbai, Vapi, Surat etc. and has logistic linkage with the rail, road and sea and airport to exploit the export potential. The location is just 25 Km from Manmad railway station, 65 Km from the Nasik city and 285 km from the Mumbai metropolis.

1. 3 PROCESS IN BRIEF :

The principle of preservation by dehydration process is to remove the moisture content of a material to a level where microorganism may not be able to grow and spoil it. Dehydration of onion and garlic by sun drying is the oldest known method. Now modern techniques have been developed for dehydration. In this process, the dehydrated product has better flavor, color, aroma, re-hydration, acceptability, etc. in comparison to sun-dried dehydrated product.

1. 4 USES & APPLICATION :

Dehydrated onion is used as condiment and flavoring agent in manufacturing of tomato ketchup, sauces, salad, pickles, chutneys, meat sausages, masala breads and buns, breakfast food etc.,

Garlic in its raw form is used for spicing of vegetables, meat products and salted infant foods. Dehydrated garlic is used for aids in digestion and for absorption of food having a telemetric and antiseptic properties and used in some medicinal formulations. Garlic powder is utilized as spice additive, appetizer and flavoring agent in cooled and instant foods. Garlic powder has also now been established as an ayurvedic medicine for heart and rheumatic disorders. Garlic pills, pearls, capsules etc. are some of the popular medium adopted by pharmaceutical companies to market this product in domestic & export market.

Dehydrated Garlic powder

1. 5 Industry Status:

Most of the Onion & Garlic powder plants in the country are located in Gujarat, Madhya Pradesh and Maharashtra State due to the abundant availability of these commodities in the western states. All the units are in small scale sector with combined capacity of 1800 Tonne per annum. The capacity utilisation in this industry has generally been around 75%. In the last decade, 100% production of Garlic powder was being exported, but of late, around 70% production is exported as powder, 20% is consumed domestically by pharmaceutical industry and the balance 10% is also exported as value added product of pharmaceutical industry. Garlic is sometimes imported into India as the domestic production is not sufficient. However there is high import duty to compensate the domestic producers.

Tamil Nadu, particularly Chennai, is the market for imported garlic. World's Largest producer of Garlic is the USA. Kyolic, Kwai, Garlicin, Pure-Gar are the major brands of medicinal products. Producing garlic for medicinal purposes is more complex. China & Argentina are the next important countries in this trade for low prices of products. Garlic is a very labor intensive crop The culinary market includes primarily fresh garlic, both organic and non-organic, and smaller markets for dried or dehydrated garlic. There is little processing that is necessary for the culinary market.

2. 0 MARKET POTENTIAL:

2. 1 GENERAL :

The market for dehydrated products are food processing industries and the domestic consumer market. Among the consumer markets, the product finds its placement in all self-service counters, departmental stores, " A" and " B"

class retail outlets of groceries and provisions. Dehydrated vegetables can be used in the preparation of puloas, soups, etc., while dehydrated powders can be used as toppings on cooked vegetables and snack foods. They provide a variety of tastes appealing to the palate. These products constitute ready additions to canned soups, salads, hamburgers, pizzas & other fast food preparations. Also suitable for varied food preparations strong and natural flavor & taste is desired. Greatly sought after as key ingredient of Sauces, canned , dry and frozen food, salad dressings, meat preparations and other food products. Thus, the major end user sectors from where the demand for Garlic powder emanates are Food spices, salted snacks ; canned snacks; Drugs and Pharmaceutical Industry etc. The food processing sector has recorded spectacular progress since 1990. The output of processed food industry is estimated to be Rs. 25000 crores per year with demand growth rate of 8% per annum.

On a rough estimate around 20% of all processed food items utilise 3 to 5% Garlic powder. In terms of demand statistics this means increased requirement of Garlic powder from food processing alone. Use of Garlic powder in drug & pharmaceutical industry as pills, pearls and capsules is estimated at Rs. 2 crore. Growth of drug industry has been around 27% to 30% since last many years. A demand potential of Rs. 5 crore for Garlic powder from this sector can be safely forecast. Thus the total demand of Garlic powder by year 2010 will be in the region of Rs. 20 crores. This is more than the double against the estimated production from existing 15 - 20 units and the new capacity likely to be created in the near future. The large

demand supply gap is perceived in future. For a new entrepreneur entering into this field the market prospects are bright.

The dehydrated products are introduced by the food processing companies into the domestic market in retail packet forms under different and appealing brand names. The concept has been introduced for the convenience of Indian working women, households, hotels, catering, resorts, restaurants, food industry, etc. At a time when several firms are catering to the needs of overseas consumers to their fullest satisfaction, their attention is drawn to serve our own country man.

The Indian economy has been fast developing and trend towards fast food have come along with this, which is a boosting factor for dehydrated products. The difficulties faced in using Onion and Garlic in fresh form has necessitated to introduce in preserved forms viz. Kibbled, Flakes, Granules, Minced & Powder. These have served the fast food and pharmaceutical industries very well and are no doubt a boon for the cooking generation in the years to come.

2. 2 USA SCENARIO & EXPORT MARKET:

The U. S. garlic industry is concentrated in California's central valley (Fresno, Kern and Monterey counties) and consists of producers of fresh, dehydrated and seed garlic. It is estimated that fresh garlic accounts for 20 to 25 percent of domestic production, while dehydrated garlic represents 60 percent of production. The remaining 15 percent is used for garlic seed. During the last twenty years, the U. S. garlic industry has experienced rising production and an overall upward trend in price. A greater awareness of the health benefits

of garlic consumption and the rising popularity of ethnic cuisines has contributed to the increasing demand. In terms of trade, total garlic import levels typically summed to an amount equal to 20 percent of domestic production, while exports accounted for about 15 percent of domestic production. However, in the previous decade, a surge in Chinese fresh garlic imports drove the fresh garlic import to fresh garlic domestic production ratio up to 28.5 percent. Imports rose by 747.38 percent in the previous decade.

Several Indian companies are already exporting to Europe, Canada, Australia, Japan and Africa. Samples sent to prospective export targets have fetched overwhelming response, Hence these companies are poised to expand their market reach and gain a conspicuous position in the world market.

3. PRODUCTION & TECHNICAL ASPECTS:

3.1 RAW MATERIALS :

The only raw material required for this project is Onion and Garlic. Only hand picked large bulbs of Garlic and good quality white or red onions are selected for processing. The yield is taken roughly about 12% of the input. The report and the financial aspects are estimated on the basis of 1250 MT of annual processing in 300 days.

Onions for processing are grown from specific varieties best suited for dehydration. Specific strains of the Creole Onion, Southport Globe Onion, and the Hybrid Southport Globe were developed by the dehydration industry. They are white in color and process a higher solid content which yields a

more flavorful and pungent onion. There are two general categories of garlic, hard-neck and soft-neck.

3. 2 THE MANUFACTURING PROCESS :

The general process for the dehydration of vegetables, onion and garlic is selection of raw materials, sorting, grinding, washing, preparation of vegetables (peeling, cutting or trimming etc., dicing / slicing / pricking), blanching, sulphuring, drying, packaging and labeling. The process adopted for various items differs in respect of preliminary treatment, temperature and humidity condition.

Onion dehydration involves the use of a continuous operation, belt conveyor using fairly low temperature hot air from 38 - 104°C. The heat originally was generated from steam coils, but now natural gas is more popular. Typical processing plants will handle 4500 kg of raw product per hour (single line), reducing the moisture from around 83 percent to 4 percent (680 - 820 kg finished product). These plants produce 2. 25 million kg of dry product per year using from 35 - 46 MJ/dry kg produced (+14 MJ/kg of electrical energy), or 9. 3 MJ/kg of water evaporated. An example of one type of processing equipment, the Proctor dehydrator, is a single-line unit 64. 5 x 3. 8 m wide, requiring 2450 m³ of air per minute and up to 42 million kJ per hour. Due to the moisture removal, the air can, in some cases, only be used once, and thus, is exhausted. Special silica gel-Bryair, desiccations units are required in the final stage. Approximately \$200, 000 in fuel are, thus, used in a single-line dryer in a year's operation (180 days).

Main products of Garlic are : Garlic Oil Capsules, Odor Controlled Dried Garlic Products, Aged Odorless & Garlic Extract. The volatile garlic oil is obtained by steam distillation from the crushed bulbs or cloves of the common garlic plant. Garlicin is the main content in garlic oil.

3. 2. 1 ONION DEHYDRATION :

Dehydrating onions is a great way of preserving them in an easy-to-use form. Due to the fact that they are 88% water, they shrink quite a lot when dried, which means they take up less storage space & will keep for a long time. Due to the strong smell of onions, it's advisable not to do any other produce at the same time! Fundamentally speaking, to dry onions, simply peel & slice them into 5mm slices or rings(or whatever size the customer demands). Spread them onto Mesh Sheets & dehydrate at 55 deg C for 10 hours or until they are crisp. Similarly, to turn the dried onion into flakes or powder, put them into a food processor or blender & process until ground into the desired size. To create onion salt, mix equal parts salt with finely ground onion powder. To store, put into an airtight container & store in a dry, dark & cool place. However, these are only domestic tips. To produce dehydrated products on a commercial scale, all above operations are required to be carried out on an industrial scale in bigger equipment.

It was observed that the existing onion dehydration plants were facing problems regarding quality of dehydrated onion especially colour, taste, texture, etc. Also, the drying time was high. Keeping the above views in mind, the research work on dehydration of freshly harvested Talaja local, white cultivar of onion, was taken for the studies by some Indian Scientist in

Michigan University. Its physical and thermal properties were determined. A laboratory scale thin layer dryer was developed for conducting the experiments on dehydration. The effects of independent variables, namely, the drying air temperature, velocity of air and thickness of onion slice on the drying time, sensory quality, rehydration characteristics and bacterial counts were studied.

Based on the research findings, it could be recommended that the dehydration of white onion should be carried out at 76 °C drying temperature and 27 m / min velocity of air, keeping 3 mm thickness of slice to get good quality of dehydrated flakes with the lowest value of drying time (58 min). Garlic Powder is obtained from peeling, drying and pulverizing of Garlic bulbs which are commonly available as vegetable additives. Garlic powder can be manufactured by Automatic flaking, spray drying & powdering process and Semi automatic batch type flaking drying & palavering process. The semi automatic batch type process is suitable for small scale sector.

3. 2. 2 DRYERS USED IN DEHYDRATION PROCESS:

TRAY DRYERS: Tray Dryer are used for Drying small and medium quantity materials. The materials are held in SS Trays with SS net bottom. Hot air is blown through the material in 2 directions at interval (top to bottom and bottom to top) with the help of a special reversing flow valve. The drying will be fast and more uniform. The heating can be Electric or Steam or LPG. The outer body, doors etc. are with double walled insulated MS panel duly painted. Automatic temperature control is provided for each dryers

TUNNEL TYPE DRYERS: Tunnel type dryer is a continuous Dryer, for processing wet solid materials. It is used for processing sliced vegetables, onion, garlic and even fruits etc. as needed. Materials fed in Trolleys or Trucks moves inside the tunnel on rails from feeding end to the delivery end. Dried materials are obtained at the delivery end. Hot air is blown as through flow, or concurrent flow or as counter flow according to the particular design.

The latest technique for dehydration of vegetable known as osmotic dehydration has been developed by BARC, Bombay.

3. 3 POWDER MAKING :

Garlic or Onion powder can be manufactured by following processes • Automatic flaking, spray drying & powdering process. • Semi automatic batch type flaking drying & pulverising process. The semi automatic batch type process is suitable for small scale sector as all the qualities of Garlic and Onion are maintained in the powder also. The process consists of flaking the bulbs and aspirating the same, so that the buds are separated from cover. The clean buds and flaked onion, as the case may be, are now dehydrated, dried and pulverised. The powder thus obtained is packed in polythene bags of 1 Kg and 5 Kg capacity.

3. 4 DIFFERENT FORMS :

Dehydrated onions and Garlic are produced in modern units in different forms like chopped, kibbled, minced, granules and powder for the domestic and export markets. The product is also in the form of toasted slices, processed in hot air closed continuous system that preserves the natural integrity of the product without any loss of flavour, colour and aroma. The <https://assignbuster.com/dehydration-of-onion-garlic-essay-sample/>

process is completely natural with no use of any preservatives or chemicals. The facility for making onion and garlic powder upto 500 Mesh is thoroughly ultra -modern.

3. 5 POLLUTION CONTROL :

The water effluent in this industry is coming from cleaning, washing, pretreatment and blanching of raw material. It is advisable to test the water discharge as per specification laid down by Bureau of Indian Standards or the State Pollution Control Board. The provision of water treatment has been made in this project report. The entrepreneur should have to contact State Pollution Control Board for guidance in the matter.