A HEALTH-PROMOTING CHEWABLE FOOD PRODUCT FREE OF ARECA NUTS AND TOBACCO AND THE PROCESS AND COMPOSITION THEREOF

FIELD OF TECHNOLOGY

This invention relates to a novel non-areca nuts chewing product as a health friendly substitute for health unfriendly traditional mouth fresheners. The product under the present invention is characterized by eliminating the use of health unfriendly areca nuts and instead uses health promoting mixture of processed chicory roots, spices and other additives in such a way so that the said novel mouth freshener gives the same hard bite feel and stimulating satisfaction to the consumer as to that of traditional mouth freshener that mainly comprises health unfriendly hard natured supari (also referred as areca nuts) as the main ingredient responsible for hard bite and stimulating effect.

More particularly, this invention relates to areca nuts free chewing product having the hard bite stimulating feel, taste, aroma, flavor and characteristics similar to traditional areca nut containing chewing product but free of health hazards. Preferred feature of the present invention is health unfriendly areca nut replacement in a mouth and breath freshening chewing product and the resultant areca nut free mouth and breath freshener chewing product comprises a mixture of processed chicory roots which are medicinal and health friendly and health promoting having hard bite, stimulating and pleasant aromatic characteristics comparable to areca nuts. This invention also relates to a composition and the process for the preparation of the composition comprising:

i) processing of raw chicory roots to make them suitable for its use for mouth and breath freshening applications having hard bite and stimulating characteristics similar to health unfriendly areca nut;

ii) composition for health friendly areca nut free mouth and breath freshening chewing product comprising flavouring agent and dusting mix;

iii) process for the preparation of composition of point no ii illustrated hereinabove .

The terms areca nut, betel nut and supari used hereinabove and herein below are the synonyms for the same product.

BACK GROUND OF THE INVENTION

Areca nut (popularly known as supari) is the fourth most commonly used social drug ranking after nicotine, ethanol and caffeine. Areca preparations and specific ingredients vary by cultural group and individual user. A betel quid is defined as a substance, or mixture of substances, placed in the mouth, usually containing at least one of the two basic ingredients, tobacco or areca nut, in raw or any manufactured or processed form. It generally contains betel leaf, areca nut and slaked lime, and optionally may also contain tobacco. Such products are called as gutkha or mawa. Other substances, particularly spices, including cardamom, saffron, cloves, aniseed, turmeric, mustard or sweeteners, are added according to local preferences. Many prefer commercially manufactured dry areca products such as Paan masala, Supari and the likes which are convenient and imperishable mixtures that are for widespread use.

The major constituents of the nut are carbohydrates, fats, proteins, crude fiber, polyphenols (flavonols and tannins), alkaloids and mineral matter. Polyphenols (flavonols, tannins) constitute a large proportion of the dry weight of the nut and are responsible for the astringent taste of the nut. It contains at least structurally related pyridine alkaloids including arecoline, arecaidine, arecaine, arecolidine, guvacine, isoguvacine, guvacoline, and coniine. They are the most important biologically active and responsible for stimulating effect.

Arecoline, the principal alkaloid in areca nut, acts as anagonist primarily at muscarinic acetylcholine receptors, acts as a stimulant of the central and autonomic nervous system, and causes increase in the levels of monoamines such as nor-adrenaline, as well as acetylcholine at higher doses. This leads to subjective effects of increased well-being, alertness and stamina. Two main products are gutka and

panmasala. Gutka is a dry, relatively nonperishable commercial preparation containing areca nut, slaked lime, catechu, condiments and powdered tobacco. The same mixture without tobacco is called pan masala. These products arrived in the market in the late 1960s and early 1970s. Although the actual prevalence of this habit is unknown, however, its popularity can be gauged from the current commercial estimates of several hundred million US dollars. These products are exported to all countries where asian migrants live. Global estimates report up to about 600 million chewers.

The harmful effects of the gutka has not only limited its production but also has been banned in many states. This has motivated the industry to develop the product popularly known as pan masala which has been accepted as one of the best mouth freshener. Looking at the current consumption the inventors of the present invention have developed a similar kind of mouth freshener characterized by a fact that it does not contain the areca nuts but the new novel product gives the same satisfaction to the consumer as if one is consuming product containing areca nuts.

Although Sushruta, in the 1st century AD wrote that it (‘supari’) tends to cleanse the mouth, impart a sweet aroma to it, enhance its beauty and cleanse and strengthen the voice, tongue and teeth, the jaws and the sense organs. But in the recent years medical studies and statistical studies have shown that areca nuts may be harmful to one’s health. It has been proposed that areca nuts may, for example, have harmful effects upon the consumption. Nevertheless, the number of individuals eating areca nuts products has been increasing, with statistical studies showing that the increase is among young people.

Areca nut as Stimulant:

The National Institute of Health states areca nut's long-standing reputation as a stimulant. On chewing it produces a stimulant response that, in low doses, is similar to caffeine or nicotine. In high doses, it produces cocaine-like effects including elevated heart rate, high blood pressure, dilated pupils, anxiety, insomnia and cardiac arrhythmia.

Areca as Euphoric:

Areca nut owes its popularity as a recreational drug to its euphoric side-effects. According to the National Institute of Health (NIH), areca nut chewers report feeling happier, more energetic and more alert when using the product. Some users combine areca nut chewing with other psychoactive herbs, such as ephedra, guarana and tobacco.

Areca as Cholinergic:

The NIH reports that areca nut is potently cholinergic; it powerfully alters the function of certain neurotransmitters and alters the state of the central nervous system. Drugs in this class produce a myriad of side effects including excessive salivation, increased tearing, urinary and fecal incontinence, sweating, and diarrhea and vomiting.

Areca as Teratogenic:

Areca nut may be teratogenic, or disruptive to the development of a fetus. The health information website Drugs.com warns pregnant women to avoid chewing areca nut because it can damage an unborn baby's DNA and harm its development.

Areca as Carcinogenic:

Areca nut quids, particularly those containing tobacco, cause cancer. The NIH links regular areca nut chewing to cancers of the mouth and oesophagus. Additionally, compounds in areca nut can encourage the growth of liver, lung, cervix, stomach, mouth and prostate cancers.

Areca as Heart disease contributor:

Betel-quid (Areca catechu) chewing is a contributory cause of metabolic syndrome in humans, which implies a greater likelihood of developing cardiovascular disease among those with the betel habit. Betel quid is used by close to 10% of the world's population. Betel quid use is associated with the metabolic syndrome, a risk factor for heart disease. At least one study has shown that Betel-quid use is

independently associated with heart disease. American Journal of Clinical Nutrition, Vol. 85, No. 5, 1229-1235, May 2007.

Presence of cholinomimetic and acetylcholinesterase inhibitory constituents in areca are the most commonly used drug in the world after tobacco, ethanol and caffeine. The study provides first evidence for the presence of AChE inhibitory constituents in areca nut, though additional direct muscarinic stimulatory effect cannot be ruled out and this study provides sound scientific basis for some of the folkloric uses associated with betel nut chewing. (Life Sci. 2004).

There are a number of prior art references disclosing the use of chicory for the preparation of beverages and other edibles.

US20090050165 discloses a process for preparing herbal filler composition for biri, cigarette and the like comprising gradual sun dried leaves of Cichorium intybus (Chicory), shredding said leaves without midribs in a shredder to the desired size, 10-90% tobacco in the said shredded leaves, optionally, adding flavoring agents in said shredded leaves and tobacco, mixing evenly, and filing said flavored shredded leaves in biri, cigarette and the like for smoking.

EP-930317 discloses an improved process for the manufacture of chicory inulin, hydrolysates and derivatives of inulin by conventional manufacturing techniques from roots of chicory. The invention also relates to improved grades of chicory inulin, of hydrolysates of chicory inulin, such as e.g. a polydisperse oligofructose composition and a fructose composition, as well as to the use of these products in the manufacture of food, feed, drinks, prophylactic and therapeutically compositions, chemical derivatives and non-food compositions.

US4671962 discloses chicory based refreshing drink prepared from a chicory root extract solution by causing a sugared chicory juice to be fermented by using Kefir type ferment. The solution obtained by maceration, decoction or infusion of roasted or dried chicory roots, and sugared to yield a 6-percent saccharose concentration in the end product. Preferably, the sugar consists of a mixture of molasses and pure sugar

with molasses contents of the third-crop syrup in excess of 81.6 g/liter, the fermentation process being controlled by measuring the acidity rate which is kept preferably at 2.5 percent after 70 hours.

The prior art related to chicory and described herein above neither disclose or motivate or encourage nor a person skilled in the art gets an anticipation to address the issue relating to health unfriendly areca nuts in mouth and breath freshening applications by replacing the health unfriendly areca nuts with a health friendly product having similar hard bite and stimulating characteristics as areca nuts. Raw chicory as such can't be used as a replacement for areca nuts for the chewable mouth freshener application. Inventors of the present invention after exhaustive R&D efforts have been able to process and convert the raw chicory into the chewable product having similar stimulating hard bite characteristics as areca nuts which can be used as a major ingredient for the preparation of a novel mouth and breath freshening health friendly and health promoting chewable composition free of areca nut. The product of the present invention is an ideal health friendly and health promoting substitute for the harmful traditional mouth and breath fresheners. The product of the present invention mainly comprises suitably processed chicory roots, spices and other additives that give the same satisfaction to the consumer as to that of traditional pan masala and the traditional gutka. The main ingredient chicory of the product under present invention is a medicinal plant which works as good as areca nut in respect of hard bite and stimulant characteristics but also possesses additional health promoting properties as mentioned herein above and herein below in the specification thereby providing the value addition to the product under the invention.

The product is characterized as herein below:

1. Chicory based substance as a product as a supari substitute for mouth freshener and breath freshening applications.
2. Process for converting raw chicory roots into usable substitute for supari having similar hard bite, stimulating and aroma characteristics.
3. Composition for areca nut free mouth freshener and breath freshener.

4. Process for the preparation of the composition.

Chicory**(*Cichorium intybus)*** is a caffeine-free herb that is popular as a coffee substitute, as well as an ingredient in New Orleans Coffee (or 'chicory coffee') recipes. Unlike decaf coffee, chicory is naturally caffeine free. Today, chicory remains a popular coffee replacement or coffee flavoring in New Orleans, and 'New Orleans Coffee' typically refers to chicory coffee. New Orleans coffee vendors often blend their coffee with up to 30 percent chicory root.

For cost-cutting reasons, and perhaps for safety reasons, chicory is also used as a coffee substitute in many U.S. prisons. Chicory is more water soluble than coffee, which means that it needs to use a lot less quantity when brewing it with coffee or instead of coffee or coffee based recipes .Chicory is usually much cheaper than coffee it becomes economical and that favors the budget.

CHICORY AND HEALTH:

Chicory is a healthy natural agricultural product. It is caffeine free, so if one is having issues with caffeine addition or caffeine overdose, then drinking chicory coffee or plain chicory can be a good way to reduce caffeine intake or eliminate caffeine from your diet. Chicory is also reported to kill intestinal parasites (or act as a vermifuge), cleanse the blood and improve liver health.

Chicory is used for loss of appetite, upset stomach, constipation, liver and gallbladder disorders, cancer, and rapid heartbeat. It is also used as a “tonic,” to increase urine production, to protect the liver, and to balance the stimulant effect of coffee. Some people apply a paste of chicory leaves directly to the skin for treating swelling and inflammation. In foods, chicory leaves are often eaten like celery, and the roots and leaf buds are boiled and eaten. Chicory is also used as a cooking spice and to flavor foods and beverages. Coffee mixes often include ground chicory to enhance the

richness of the coffee. Chicory root has a mild laxative effect, increases bile from the gallbladder, and decreases swelling. Chicory is a rich source of beta-carotene.

HEALTH BOOSTING BENEFITS:

- Chicory root supports digestion and the breakdown/metabolism of fats by increasing bile production.
- It contains inulin which is food for beneficial digestive flora -boosting immunity.
- Inulin can regulate blood sugar levels and remove toxins from the body.
- Chicory contains antioxidants.
- It reduces inflammation in the body.
- Studies show that it's antibacterial and antifungal.
- Helps reduce heart rate and has been used in the treatment of tachycardia.
- (rapid heartbeat), arrhythmia and fibrillation.
- Helps boost digestion and relieve constipation.
- Chicory roots treat liver problems and are known for cleansing the blood.

In view of above if chicory roots can be processed to convert them into suitable product having similar characteristics in respect of hard bite and stimulation as health unfriendly areca nuts and usable for chewable mouth freshening products then it is an ideal health friendly substitute for areca nuts for mouth and breath freshener applications. There is no such teaching in the prior art nor a person skilled in the art can anticipate, therefore, inventors of the present invention based on exhaustive R&D efforts have achieved the success by converting the raw chicory roots, which as such can't be used as a replacement for areca nuts, into a chewable nuts having similar hard bite and stimulating characteristics as areca nuts which has been used in a composition and the processed chicory is an ideal replacement for areca nuts for health friendly mouth freshener.

OBJECT OF THE PRESENT INVENTION:

First aspect of the invention is to develop a mouth freshener and breath freshener that will not be health hazardous.

Second aspect of the invention is to develop a health friendly and health promoting mouth and breath freshener.

Third aspect of the invention is to develop a mouth and breath freshener which is an substitute for the gutka containing both areca nut and tobacco and also pan masala containing areca nut as an essential ingredient.

Fourth aspect of the invention is to use processed health friendly and health promoting chicory root as a substitute for health unfriendly hard areca nut (supari).

Fifth aspect of the invention is to develop a process for converting raw chicory roots into useable substitute for health unfriendly supari having hard bite, aroma and stimulating characteristics similar to supari.

Sixth aspect of the invention is to develop a composition for supari free mouth and breath freshener.

Seventh aspect of the invention is to develop a mouth and breath freshener comprising processed chicory roots, spices and other additives.

Eighth aspect of the invention is to make a supari free mouth and breath freshener or so called pan masala comprising processed chicory roots that not only possess chew ability, hard bite and stimulating satisfaction similar to rational mouth fresheners but also provide health value by imparting fiber from plant source.

Ninth aspect of the invention is to develop a process for converting raw chicory roots into a health friendly product having similar characteristics as areca nut and the

processed chicory roots is used for the preparation of health friendly and health promoting mouth freshener and breath freshener under the present invention.

Tenth aspect of the invention is a suitably processed chicory roots having hard bite, stimulating and aroma characteristics similar to areca nut.

A specific aspect of the invention is to provide a process for the preparation of a composition under the present invention comprising:

i) processing of chicory roots

ii) adding flavouring agent

iii) adding dusting mix.

SUMMARY OF THE INVENTION

The present invention relates to areca nuts free chewing product and the process for preparing the same with an objective to replace health unfriendly traditional pan masala containing areca nuts. The product under the present invention is characterized by eliminating the use of health unfriendly areca nuts and instead as a substitute comprises a mixture of health friendly and health promoting processed chicory roots, spices and other additives in such a way so that the novel mouth freshener gives the same satisfaction to the consumer in respect of hard bite, aroma and stimulating characteristics as to that of traditional pan masala that mainly comprises supari (areca nuts) as a major ingredient.

More particularly, the present invention relates to the health friendly and health promoting areca nuts free chewing product having the hard bite feel, stimulating effect, taste, aroma and flavor characteristics similar to those containing areca nut but free of the harmful effects of areca nuts. Preferred features of the present invention is to provide a suitably processed health friendly and health promoting chicory as a

substitute for health unfriendly areca nut for a chewing product having similar hard bite and stimulating feel as that of areca nuts. The novel chewing product comprises a composition comprising suitably processed chicory roots which possess the medicinal and health friendly, stimulating and pleasant aromatic characteristics and the said health friendly and health promoting suitably processed chicory roots having the similar hard bite characteristic as of areca nut and together with health-promoting spices and other additives such as taste enhancers, stabilizers, flavor enhancers, glazing agents, antioxidants, gelling agents, surface colorants, cardamom seeds, dusting mix and the likes.

Herein after chicory roots which obtained after washing, cutting and boiling steps referred as chicory.

The process mainly comprises the following:

i) Preparation of suitably processed chicory having hard bite and stimulating characteristics similar to areca nut as described herein above below;
ii) Adding flavoring agents to the chicory obtained in step I;
iii) Flavoring the said composition of step ii with dusting mix.

The process comprising:

i) collecting and cleaning raw chicory roots comprising washing the raw chicory roots with potable water to remove loosely adhered mud and other water removable impurities;

ii) cutting the washed chicory roots obtained in step i) into suitable chewable size portion and heating the cut chicory to water boiling temperature of about 100^0C for about 10-to about 25 minutes;

iii) to the cut chicory obtained in step ii) is added about 0.2% to about 14% mixture of ingredients comprising about 33% to about 75% taste enhancers, about 20% to about 60% stabilizers and about 0.1% to about 6% flavor enhancer;

iv) digesting the chicory obtained in step iii; the digesting comprises mixing the cut chicory uniformly with the tastemakers, stabilizers and flavor enhancers of step iii) at about 25 – 60^{0}C for about 25 – 100 minutes to obtain homogenously digested chicory and the digested chicory possess desired hard bite through, stimulating and aroma characteristics similar to areca nuts;

v) drying the chicory obtained in step iv at about 80^{0}C to about 100^{0}C till the moisture content remains around about 5% w/w of chicory;

vi) to the dried chicory obtained in step v) is added about 0.1% to about 5% of mixture comprising about 90% to about 99.9% glazing agents and about 0.1% to about 10% antioxidants;

vii) the chicory obtained in step vi) are pan coated with a solution of mixture comprising about 0.05 to about 4% thickeners, about 0.2 to about 15% gelling agents and about 0.02 to 10% surface colorant and the likes so that about 10 to 50% coating is left in the final product w/w to chicory;

viii) the coated chicory obtained in step vii) are dried at about 80^{0}C to about 100^{0}C till the moisture content remains around about 5% w/w to chicory and the dried processed chicory having hard bite through, stimulating and refreshing characteristics similar to areca nuts are suitable for use for the preparation of areca nut free chewable food product also referred as mouth freshener, breathe freshener, pan masala and the likes.

The chicory obtained herein above are ideal health friendly and health promoting substitute for health unfriendly areca nuts for mouth and breathe freshening applications. The processed chicory obtained hereinabove are used for the preparation of mouth and breathe freshening composition comprising:

i) flavoring the processed chicory with about 1 – 4% flavouring agent select from cardamom seeds and the likes;

ii) conditioning the flavoured chicory at about 4 to about 32°C and about 45 to about 50% relative humidity;

iii) adding to the conditioned chicory about 3-30% dusting mix; the said dusting mix comprises catechu 40% – 75%, lime 10% – 45%, anti-caking agents 0.2% - 2% and taste enhancers: 0.2% - 10%;

iv) packaging the conditioned chicory as a finished chewable food product also referred as mouth freshener , breath freshener, pan masala and the likes.

ADVANTAGES OF THE PRESENT INVENTION

The product, composition and process disclosed herein relates to a health friendly and health promoting chewable mouth and breath freshener that is free of health unfriendly hard supari which is replaced by health friendly chicory wherein unusable raw chicory is suitably processed to impart hard bite and stimulation characteristics similar to supari/betel nut. The mouth freshener and breath freshener also referred hereinbefore and hereinafter as pan masala of the present invention is free of harmful chemicals associated with supari. At the same time pan masala comprising chicory is fully derived from plant source rich is fiber and imparts satisfaction to the chewer similar to that from traditional supari based pan masala.

DETAILED DESCREPTION OF THE INVENTION:

While this invention is susceptible to embodiment in many different forms, will herein be described in detail specific embodiments, with the understanding that with the present disclosure of such embodiments is to be considered as example of the principles and not intended to limit the invention to the specific embodiments shown and described herein. In the summary and description hereinabove and herein below like and likes reference are used to describe the same, similar or corresponding material for

the same purpose. The detailed description defines the meaning of the terms used herein and specifically illustrates embodiments to enable those skilled in the art to practice the invention.

The terms “a” or “an” as used herein, are defined as one or as more than one. The terms including “including” and/or “having” as used herein, are defined as comprising (i.e open language).

The term about means ± 10%.

The term mouth freshener, breath freshener and pan masala herein means a single product referred as mouth freshener or breath freshener or pan masala or are 3 different products referred as mouth freshener, breath freshener or pan masala.

This invention relates to a health unfriendly areca nuts free chewable food product also referred as mouth freshener, breath freshener, pan masala and the likes containing a health friendly and health promoting chewing product having the hard bite taste, stimulating, refreshing, aroma and flavor characteristics similar to areca nut but free of the harmful effects of the traditionally used areca nut. The composition of the product under the invention comprises processed chicory roots also referred as chicory, taste enhancers, stabilizers, and flavor enhancers, glazing agents, antioxidants, gelling agents, surface colorants, cardamom seeds and the dusting mix and the likes.

In an embodiment disclosed herein is a process for the processing of raw chicory roots to obtain processed chicory having hard bite through, stimulating, aroma and flavor characteristics similar to areca nuts and the said processed chicory are ideal substitute for areca nut for the preparation of areca nut free health friendly chewable product also referred as mouth freshener, breathe freshener, pan masala and the likes. The process disclosed herein for the processing of raw chicory roots comprises the steps of:

i) collecting and cleaning raw chicory roots comprising washing the raw chicory roots with potable water to remove loosely adhered mud , dust and other unwanted material which can be removed by washing with water.

ii) cutting the washed chicory roots obtained in step i) into suitable chewable size portion and heating the cut chicory to water boiling temperature of about 100^0C for about 10-to about 25 minutes;

iii) to the cut chicory obtained in step ii is added about 0.2% to about 14% w/w of chicory a mixture of ingredients comprising about 33% to about 75% taste enhancers, about 20% to about 60% stabilizers and about 0.1% to about 6% flavor enhancer;

iv) digesting the chicory obtained in step iii; the digesting comprises mixing by standard process like stirring the cut chicory uniformly with the mixture comprising tastemakers, stabilizers and flavor enhancers of step iii) at about 25 – 60^0C for about 25 – 100 minutes to obtain homogenously digested chicory and the digested chicory possess desired hard bite through, stimulating and aroma characteristics similar to areca nuts;

v) drying the chicory obtained in step iv at about 80^0C to about 100^0C till the moisture content remains around about 5% w/w of chicory;

vi) to the dried chicory obtained in step v is added about 0.1% to about 5% w/w of chicory a mixture comprising about 90% to about 99.9% glazing agents and about 0.1% to about 10% antioxidants;

vii) the chicory obtained in step vi) are pan coated with a solution of mixture comprising about 0.05 to about 4% thickeners, about 0.2 to about 15% gelling agents and about 0.02 to 10% surface colorant and the likes so that about 10 to 50% coating is left in the final product w/w to chicory;

viii) the coated chicory obtained in step vii are dried at about 80^0C to about 100^0C till the moisture content remains around about 5% w/w of chicory and

the dried processed chicory having hard bite through , stimulating and refreshing characteristics similar to areca nuts and are suitable for use for the preparation of areca nut free chewable food product also referred as mouth freshener, breathe freshener, pan masala and the likes.

The processed chicory obtained hereinabove are suitable and ideal health friendly and health promoting substitute for health unfriendly areca nuts for chewable food product applications such as mouth freshener, breath freshener, pan masala and the likes.

The processed chicory obtained hereinabove are used for the preparation of health friendly and health promoting chewable food product comprising:

i) flavoring the processed chicory with about 1-4% flavouring agent selected from cardamom seeds and the likes;

ii) conditioning said flavoured chicory at about 4 to about 32°C and about 45 to about 50% relative humidity;

iii) adding about 3-30% w/w of chicory dusting mix to the conditioned chicory to obtain a health friendly chewable food product also referred as mouth freshener, breath freshener, pan masala and the likes;

iv) packaging the health friendly mouth and breath freshener product obtained in step iii.

The dusting mix used therein in step iii is a mixture of ingredients comprising catechu about 40% – 75%, lime about 10% – 45%, anti-caking agents about 0.2% - 2% and taste enhancers about 0.2% - 10%.

In a general embodiment disclosed herein is the process for making the novel chewable food product comprising collecting and cleaning chicory roots by washing with water to remove the dust and other unwanted material which can be removed by washing with water.

In the second step of the process cleaned roots are cut into suitable uniform size followed by boiling in water to remove its bitterness.

In the third step the chicory granules are added with taste enhancers, stabilizers and flavor enhancers and are digested for uniform mixing.

In the next stage of the process chicory granules so obtained are dried at a suitable temperature in such a way so that about 5% w/w of chicory moisture is retained in the chicory granules. This is then followed by the addition of glazing agent and anti oxidants followed by pan coating the chicory granules with solution of thickening agents, gelling agents and surface colorants.

Chicory obtained are dried again till it retained with about 5% w/w of chicory moisture content.

To the chicory obtained hereinabove are then added about 1-4% w/w of chicory flavouring spice selected from cardamom seeds and the likes and the flavoured chicory are conditioned at about 4 to about 32˚C and about 40 to about 45% relative humidity and finally added with about 3-30% dusting mix by weight of chicory to get final product ready for packaging.

Taste enhancers are selected from the group comprising salts, sugar, jaggery, ammonium chloride, spice mixes, edible gums, I+G, Rebudioside, liquorice, tea extracts, plant tannins, polyphenols, myroballons, amla, hers and their extracts, edible oil, acacia catechu and gambier or mixture thereof and the likes.

Stabilizers are selected from the group comprising calcium carbonate, calcium acetate, sodium citrate, sodium dihydrogen citrate, potassium citrate, dihydrogen potassium citrate, sodium tartrate, potassium tartrate, mono potassium tartrate, dipotassium tartrate, potassium sodium tartrate, sodium phosphate, potassium tartrate, processed Euchema seaweed, gum arebica, xanthum gums, karaya gums, tara gums, gum hatti, diphosphates, polyphosphates, potassium carbonate, ammonium sulphate, maltitol and maltitol syrup, xylitol or mixture thereof and the likes.

Flavor enhancers are selected from group comprising L-glutamic acid, mono potassium glutamate, mono sodium glutamate, calcium glutamate, mono ammonium glutamate, Guanylic acid, disodium 5'-guanylate, dipotassium 5'-guanylate, calcium guanylate, Inosinic acid, disodium 5'-inosinate, dipotassium 5'-inosinate, calcium 5'-inosinate, maltol, ethyl maltol, erythritol, proteases, papain, bromelain, Glycyrrizin, monosodium succinate, disodium succinate or mixture thereof and the likes.

Glazing agent is selected from group comprising beeswax white or yellow, Candellila wax, Carnauba wax, shellac wax, mineral oil, petroleum jelly, petroleum wax, paraffin wax, benzoin wax, methyl esters of fatty acids, lanolin, isomalt and edible vegetable oils or mixture thereof and the likes.

Antioxidant is selected from group comprising sulphur dioxide, sodium sulphite, potassium sulphite, Ascorbic acid, sodium ascorbate, potassium ascorbate, calcium ascorbate, ascorbyl palmitate, ascorbyl stearate, mixed tocopherols concentrate, alpha tocopherols, propyl gallate, octyl gallate, dodecyl gallate, ethyl gallate, tertiary butylhydroquinone, butylated hydroxyanisole, butylated hydroxytoluene, lecithins, ethoxiquin, isopropyl citrate, oxystearin or mixture thereof and the likes.

Gelling agent is selected from group comprising sodium alginate, calcium alginate, agar, edible starches, Carrageenan and its Na, K, NH4 salts (includes furcellaran), Bakers yeast, gellan gums and pectins or mixture thereof and the likes.

Thickening agent is selected from group comprising food grade tannin, calcium glycerophosphates, alginic acid, potassium alginate, ammonium alginate, carob bean gum, oat gum, guar gum, tragacanth gum, curd lan, methyl cellulose, hydroxypropyl cellulose, hydroxypropyl methyl cellulose, methyl ethyl cellulose, sodium carboxymethyl cellulose, ethyl hydroxyl methyl cellulose, Croscaramellose, Sodium carboxymethyl cellulose, enzymatically hydrolysed, enzyme treated starches, dextrines, acid treated starches, alkali treated starches, bleached starches and oxidized starches or mixture thereof and the likes**.**

Surface colorant is selected from the group comprising calcium carbonate, Titanium dioxide and natural colouring agent.

Dusting mix is selected from the group comprising Catechu, Gambier, lime, skimmed milk powder, Whey protein isolate, Non-Dairy whiteners, sugar, Apricot

Kernel Powder, Grape seed extract powder, Indian Gooseberry , Belleric Myrobalan (Terminalia bellirica Roxb or bahera), Chebulic Myrobalan (Terminalia Chebula or Harad), Bael seeds extract powder, Jamun fruit and seeds extract powder, Few spice powders such as nutmeg, mace, cinnamon and cloves, Tapioca starch, corn starch, potato starch, rice starch, oat fiber, wheat fiber, corn fiber, inulin, maltodextrin, calcium carbonate, micro crystalline cellulose, powdered cellulose, and silicon dioxide and other silicates, taste enhancers or mixture thereof.

Preferably the dusting mix comprises catechu, lime , anti-caking agents and taste enhancers or mixture thereof.

Anti-caking agent is selected from the group comprising Calcium carbonate, Calcium hydrogen carbonate, Calcium phosphate, Monocalcium orthophosphate, Tricalcium orthophosphate, Magnesium phosphate, Monomagnesium phosphate, Dimagnesium orthophosphate, Trimagnesium orthophosphate, Ferric ammonium citrate, Mannitol, Cellulose, Microcrystalline cellulose, Powdered cellulose, Sodium carbonate, Sodium hydrogen carbonate, Sodium sesquicarbonate, Magnesium carbonate, Magnesium hydrogen carbonate, Magnesium oxide, Ferroudhexacyanomanganate, Bone phosphate, Sodium silicate, Sodium metasilicate, Silicon dioxide, Calcium silicate, Magnesium silicate, Magnesium trisilicate, Talc, Sodium aluminosilicate, Calcium aluminium silicate, Potassium aluminium silicate, Zinc silicate, Bentotine, Aluminium silicate, Potassium silicate, Polydimethylpolysiloxane, Isomalt (isomaltitol) or mixture thereof.

In another embodiment the suitably processed chicory roots obtained hereinabove are used for the preparation of areca nuts free health friendly and health promoting chewable food product also referred as mouth freshener, breath freshener, pan masal and the likes comprising:

i) flavoring the processed chicory with about 1-4% w/w of chicory flavouring agent selected from cardamom seeds and the likes;

ii) conditioning the flavoured chicory at about 4 to about 32°C and about

45 to about 50% relative humidity;

iii) adding w/w of chicory about 3-30% dusting mix to the conditioned chicory to obtain a health friendly chewable food product also referred as mouth freshener, breath freshener, pan masal and the likes;

iv) packaging the health friendly mouth and breath freshener product obtained in step iii.

The dusting mix used therein in step iii hereinabove comprises a mixture comprising catechu about 40% – 75%, lime about 10% – 45%, anti-caking agents about 0.2% - 2% and taste enhancers about 0.2% - 10%.

The anti-caking agent and taste enhancer is selected from the group of ingredients disclosed hereinbefore.

In a specific embodiment disclosed herein is a process for the preparation of the health friendly areca nut free chewable product also referred as mouth freshener, breath freshener, pan masal and the likes and the said process for making the edible composition comprises the steps of:

i) collecting and cleaning of raw chicory roots by washing with water to remove the dust and other unwanted material which can be removed by washing with water;

ii) about 100 gms of chicory roots obtained in step i are cut in to uniform size pieces in the dimension about 5mm thickness and boiled in about 500 ml water for about 15 minutes;

iii) to the boiled chicory roots obtained in step ii is added w/w of chicory about 0.2 to about 14% a mixture comprising taste enhancers, stabilizers and flavor enhancers and the mixture comprises about 33-75% of sucrose, spice mix, gums

or mixture thereof as taste enhancers, about 20-60% maltitol, processed Euchema sea weed, sodium tartrate or mixture thereof as stabilizers and 0.1-6% Proteases, Inosinic acid and Glutamic acid or mixture thereof as flavor enhancers;

iv) digesting the chicory obtained in step iii; the digesting comprises mixing by standard mixing process like stirring the cut chicory uniformly with the mixture of tastemakers, stabilizers and flavor enhancers of step iii) at about 25 – 60^0C for about 25 – 100 minutes to obtain homogenously digested chicory and the digested chicory nuts possess desired hard bite through, stimulating and aroma characteristics similar to areca nuts;

v) drying the digested chicory obtained in step iv at the temperature of about 80 to about 85◦C till the moisture content is reduced to about 5% w/w of chicory;

vi) to the dried chicory is added about 0.1 to about 5% w/w of chicory a mixture of glazing agents and antioxidants comprising about 90-99% Bees wax, edible vegetable oil or mixture thereof as glazing agents and 0.1 to about 10% Butylated Hydroxy anisole, sodium Ascorbate or mixture thereof as antioxidants;

vii) chicory obtained in step vi are then pan coated with a solution comprising about 0.05 to about 4% potassium alginate as thickener, about 0.2 to about 15% edible starch as gelling agents and about 0.02 to about 10% calcium carbonate as surface colorant and the like in such a way so that about 30% coating w/w of chicory is left in the final product;

viii) chicory obtained in step vii are dried at about 80 to about 85◦C till moisture content is reduced to 5% w/w of chicory and the dried chicory have hard bite through, stimulating and refreshing characteristics similar to areca nuts and suitable for preparing health friendly and health promoting chewable areca nut free food product also referred as pan masala, mouth freshener, breath freshener and the likes.

In a preferred embodiment disclosed herein is health friendly areca nut free chewable food composition also referred as mouth freshener, breath freshener, pan masala and the likes wherein the health friendly processed chicory obtained herein above posses hard bite through, stimulating, refreshing and aroma characteristics similar to areca nuts and the composition comprises processed chicory obtained hereinabove, about 1-4% w/w of chicory cardamons as flavouring agent and about 3-30% w/w of chicory, dusting mix comprising Catechu, Lime, anti-caking agent, taste enhancer or mixture thereof.

In a more preferred embodiment disclosed herein is a process for preparing the chewable food composition comprising:

i) adding about 1-4% cardamoms (w.r.t. chicory nuts) as flavouring agent to the processed chicory ;

ii) conditioning the flavoured chicory obtained in step i) at about 15-55°C, preferably 25^0C and about 30-50% relative humidity preferably 48% for about 10-30 hours preferably 24 hrs;

iii) adding about 3- 30% preferably 30% (w.r.t. chicory) dusting mix and the dusting to obtain the health friendly chewable food product also referred as mouth ,breath freshener, pan masala and the likes; the dusting mix is a mixture of ingredients comprising catechu about 40% – 75%, lime about 10% – 45%, anti-caking agents about 0.2% - 2% and taste enhancers about 0.2% - 10%.

iv) packaging the final product obtained in step iii.

The invention can be best understood from the following examples.

Example 1

100gms chicory roots are washed thoroughly with potable water to remove the dirt and clay material. These cleaned roots are then boiled with 500 ml water for 15 minutes to remover bitter elements of chicory. Boiled chicory roots are then added with 0.2 - 14g taste enhancers having combination of sucrose, spice mix, gums, 2 - 14 g

stabilizers comprising maltitol, processed Euchema sea weed, sodium tartrate and 0.5 – 4g of flavor enhancers mix such as Proteases, Inosinic acid and Glutamic acid followed by heating at low temperature to have the uniform coating over the chicory pieces. These pieces are then heated at 80◦C in such a way so that it retains 5% moisture. Chicory are then added with **1 -**5 g of glazing agents comprising Bees wax and edible vegetable oil ,0.01 – 0.1g of antioxidants Butylated Hydroxy anisole and sodium Ascorbate. Chicory are then pan coated with solution containing 1 -2g of Potassium Alginate, edible Starches, and about 0.1– 1g of Calcium Carbonate followed by heating at 80◦C till it retains moisture to get processed chicory.

Example 2

70 gram processed chicory are mixed with 0.7g cardamom and are kept at a temperature of 25◦C and relative humidity of 48% for 24hrs. This flavoured chicory is then added with 21g dusting mix having a mixture of Catechu, Lime, sugar, starches, silicon di oxide to get the final product to be used as a mouth freshener.

CLAIMS

1. A process for preparing chewable areca nut free food product wherein the process for making the food product includes the steps of:
   i. washing raw chicory roots with water to remove loosely adhered mud and water removable impurities;
   ii. cutting the washed chicory roots obtained in step (i) into chewable size portion and heating cut chicory at a temperature of 100^0C for a time period ranging from 10 minutes - 25 minutes;
   iii. adding a mixture comprising taste enhancers, stabilizers and flavor enhancer to the cut chicory obtained in step (ii);
   iv. digesting resultant mixture obtained in step (iii) comprises mixing the cut chicory uniformly with the taste enhancers, stabilizers and flavor enhancer;
   v. drying mixture obtained in step (iv) to reduce the moisture content to 5% by w/w of chicory ;
   vi. adding a mixture comprising glazing agents and antioxidants to the dried chicory obtained in step (v);
   vii. coating the resultant mixture obtained in step (vi) with a solution comprising a mixture of thickeners, gelling agents and surface colorant until at least 10% by w/w of chicory is coated;
   viii. drying mixture obtained in step (vii) to reduce the moisture content to 5% by w/w of chicory .

2. The process for making the food product as claimed in claim 1 wherein the chewable size in step (ii) is 5 mm.

3. The process for making the food product as claimed in claim 1 wherein the mixture in step (iii) comprising of 33% - 75% by w/w of taste enhancers,

20% - 60% by w/w of stabilizers and 0.1% - 6% of flavor enhancer.

4. The process for making the food product as claimed in claim 1 wherein the digestion step in step (iv) includes a standard process of stirring the mixture obtained in step (iii) at a temperature ranging in between 25^0C – 60^0C for a time period ranging from 25 minutes – 100 minutes to obtain a homogenous mixture of the food product.

5. The process for making the food product as claimed in claims 1 or 3 wherein the taste enhancers is selected from the group comprising of salts, sugar, jaggery, ammonium chloride, spice mixes, edible gums, I+G, rebudioside, liquorice, tea extracts, plant tannins, polyphenols, myroballons, amla, hers and their extracts, edible oil, acacia catechu, gambier or mixtures thereof.

6. The process for making the food product as claimed in claims 1 or 3 wherein the stabilizer is selected from the group comprising of calcium carbonate, calcium acetate, sodium citrate, sodium dihydrogen citrate, potassium citrate, potassium dihydrogen citrate, sodium tartrate, potassium tartrate, mono potassium tartrate, dipotassium tartrate, potassium sodium tartrate, sodium phosphate, potassium tartrate, processed euchema seaweed, gum arebica, xanthum gums, karaya gums, tara gums, gum hatti, diphosphates, polyphosphates, potassium carbonate, ammonium sulphate, maltitol and maltitol syrup, xylitol or mixtures thereof.

7. The process for making the food product as claimed in claims 1 or 3 whereinthe flavor enhancer is selected from the group comprising of L-glutamic acid, mono potassium glutamate, mono sodium glutamate, calcium glutamate, mono ammonium glutamate, guanylic acid, disodium 5'-guanylate, dipotassium 5'-guanylate, calcium guanylate, Inosinic acid, disodium 5'-inosinate, dipotassium 5'-inosinate, calcium 5'-inosinate, maltol, ethyl maltol, erythritol, proteases, papain, bromelain, glycyrrizin, monosodium succinate, disodium succinate or mixtures thereof.

8. The process for making the food product as claimed in claim 1 wherein the glazing agent in step (vi) is selected from the group comprising of beeswax white or yellow, candellila wax, carnauba wax, shellac wax, mineral oil, petroleum jelly, petroleum wax, paraffin wax, benzoin wax, methyl esters of fatty acids, lanolin, isomalt, edible vegetable oils or mixtures thereof.

9. The process for making the food product as claimed in claim 1 wherein the antioxidant in step (vi) is selected from the group comprising of sulphur dioxide, sodium sulphite, potassium sulphite, ascorbic acid, sodium ascorbate, potassium ascorbate, calcium ascorbate, ascorbyl palmitate, ascorbyl stearate, mixed tocopherols concentrate, alpha tocopherols, propyl gallate, octyl gallate, dodecyl gallate, ethyl gallate, tertiary butylhydroquinone, butylated hydroxyanisole, butylated hydroxytoluene, lecithins, ethoxiquin, isopropyl citrate, oxystearin or mixtures thereof.

10. The process for making the food product as claimed in claim 1 wherein the gelling agent in step (vii) is selected from the group comprising of sodium alginate, calcium alginate, agar, edible starches, carrageenan and salts thereof, yeast, gellan gums, pectins or mixtures thereof.

11. The process for making the food product as claimed in claim 1 wherein the thickener is selected from the group comprising of food grade tannin, calcium glycerophosphates, alginic acid, potassium alginate, ammonium alginate, carob bean gum, oat gum, guar gum, tragacanth gum, curd lan, methyl cellulose, hydroxypropyl cellulose, hydroxypropyl methyl cellulose, methyl ethyl cellulose, sodium carboxymethyl cellulose, ethyl hydroxyl methyl cellulose, croscaramellose, sodium carboxymethyl cellulose, enzymatically hydrolyzed, enzyme treated starches, dextrines, acid treated starches, alkali treated starches, bleached starches, oxidized starches or mixtures thereof.

12. The process for making the food product as claimed in claim 1 wherein the surface colorant in step (vii) is selected from the group comprising of calcium carbonate, titanium dioxide, natural colouring agent or mixtures thereof.

5