Cola beverage with dissolved food additives displaying free-radical scavenging properties and anti-oxidant agents

FIELD OF THE INVENTION

The present invention is in the field of food additives in the form of products which contain extracts of leaves, particularly Camellia sinensis, having concentrations of polyphenols known as catechins, particularly Epicatechin (EC), Epigallocatechin (EGC), Epicatechin gallate (ECG), Epigallocatechin-3 gallate (EGCG). The present invention relates to the process of dissolving the said additives into a carbonated or non-carbonated beverage, a particular preferred embodiment of the present invention also relates to the process of dissolving the said additives into a cola beverage, containing cola flavor (Mutual Flavors Cola Flavor C-470), high fructose corn syrup, water and carbon dioxide.

SUMMARY OF THE INVENTION

It is an object of the present invention to obtain from leaves of Camellia sinesis, an extract which contains concentrations of polyphenols known as catechins, particularly Epicatechin (EC), Epigallocatechin (EGC), Epicatechin gallate (ECG), Epigallocatechin-3 gallate (EGCG), which is utilized as an additive in beverage products, particularly into a cola beverage, containing cola flavor (Mutual Flavors Cola Flavor C-470), high fructose corn syrup, water and carbon dioxide.

It is another object of the present invention to obtain from leaves, and particularly from Camellia sinesis, an extract which is rich in polyphenols known as catechins, particularly Epicatechin (EC), Epigallocatechin (EGC), Epicatechin gallate (ECG), Epigallocatechin-3 gallate (EGCG), which does not impart an unnatural or undesired taste component to the beverage product in which the said extract is used.

It is still another object of the present invention to provide beverage products which have an enlarged concentration of polyphenols known as catechins, particularly Epicatechin (EC), Epigallocatechin (EGC), Epicatechin gallate (ECG), Epigallocatechin-3 gallate (EGCG), that have been extracted from leaves, particularly from Camellia sinesis, in accordance with the present invention.

The leaves or components of the Camellia sinesis are obtained with hot water in a temperature range of between 52.5 to 96.7 degree C, followed by depectinization of the extract with a suitable enzyme.

The depectinization of the extract should be implemented at a temperature range of between 34.5 to 67 degree C until any test for pectin is negative.

The enzyme is then deactivated by heating the mixture prior to being subjected to filtration.

During the filtration process, a suitable adsorbent is added to the filtrate aqueous solution in order to encourage agitation of the mixture to extract by adsorption of the polyphenols contained in the aqueous phrase.

The adsorbent is then collected by methods including but not limited to centrifugation or filtration.

At this stage, the adsorbent will contain the absorbed catechins, particularly Epicatechin (EC), Epigallocatechin (EGC), Epicatechin gallate (ECG), Epigallocatechin-3 gallate (EGCG), in varying quantities.

Multiple stages may be introduced prior to the adsorbent being washed with H20 in order to remove any solids.

The object of the multiple stages are to increase the quantities of the catechins substantially to a desired specification.

The liquid concentrate, or solid product derived thereof, can be added to a cola beverage, in order enrich the said beverage with free-radical scavenging properties and anti-oxidant benefits.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

In accordance with the present invention naturally occurring catechins are extracted from the leaves, particularly of the plant Camellia sinensis, having concentrations of catechins, particularly Epicatechin (EC), Epigallocatechin (EGC), Epicatechin gallate (ECG), Epigallocatechin-3 gallate (EGCG).

A liquid or solid concentrate product is obtained which is significantly enriched (with catechins) utilized as an additive to beverage items to provide the food item with a significant quantity of phenolics originating from the plant.

The leaves to be extracted preferably macerated prior to extraction so as to increase their surface area and render the extraction process more efficient.

The leave particles are then mixed with hot water, for a short time of between 1-3.5 minutes, at a temperature of between 52.2 to 96.7 degree C,

The resulting aqueous solution containing the catechins extract is subsequently cooled to a temperature of between 20 to 45 degree C.

The solution is now passed to a filtration unit to separate the suspended leave particles and other solids not dissolved from the extract solution.

During this process, additional aqueous solution containing the same catechins particles are added to enrich the concentration of the extract within the solution, in order to process the solution to contain a specific level of concentration

Additional flavorings may be added at the end of the filtration process in order to ensure that the overall taste of the beverage is not affected by the addition of the finished catechins additive

The finished solution may be further dried to obtain a solid concentrate for mixing into powered, pre-mixed beverage products such as instant, pre-mixed coffee products.

The finished solution may be added as a food additive to a beverage containing a cola flavor such as Cola flavor C-470 (Mutual Flavors), water, fructose corn syrup and carbon dioxide.

Modifications within the spirit and scope of the invention may readily be effected by persons skilled in the art. It is to be understood, therefore, that this invention is not limited to the particular embodiments described by way of example hereinabove.

THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. A process of adding a specific concentration of catechins, particularly Epicatechin (EC), Epigallocatechin (EGC), Epicatechin gallate (ECG), Epigallocatechin-3 gallate (EGCG), as an additive into a liquid beverage, the process comprising the steps of:

   macerating the leave or plant containing catechins, such as the Camellia sinesis, into particles;

   extracting the catechin particles with water to yield an aqueous extract;

   separating the bulk of particles from the extract;

   further processing the extract by purification to yield an aqueous solution consisting of EC, EGC, ECG, EGCG;

   adding the solution as an additive into a beverage

2. A process of adding a specific concentration of catechins, particularly Epicatechin (EC), Epigallocatechin (EGC), Epicatechin gallate (ECG), Epigallocatechin-3 gallate (EGCG), as an additive into a liquid beverage, the process comprising the steps of:

   macerating the leave or plant containing catechins, such as the Camellia sinesis, into particles;

   extracting the catechin particles with water to yield an aqueous extract;

   separating the bulk of particles from the extract;

   further processing the extract by purification to yield an aqueous solution consisting of EC, EGC, ECG, EGCG;

   adding the solution as an additive into a cola beverage containing cola flavor, high fructose corn syrup, water and carbon dioxide

3. A process for extracting plant catechins from camellia sinesis leaves the process comprising the steps of:

   macerating the leaves into particles;

   extracting the camellia sinesis particles with water to yield an aqueous extract;

   heating the aqueous extract to approximately 65 to 97.5.degree. C.

   separating the bulk of particles from the extract;

   filtration and distillation of the extract to obtain a purified sample;

   treating the sample solution with a nutritionally acceptable base to yield an aqueous solution of plant catechins containing Epicatechin (EC), Epigallocatechin (EGC), Epicatechin gallate (ECG), Epigallocatechin-3 gallate (EGCG),

   adding the solution as an additive into a beverage

4. A process as claimed in claims 1, 2 and 3, further comprising the step of reducing the aqueous solution of plant catechins to dryness to provide a solid concentrate of plant catechins

5. A process as claimed in all the preceding claims (claims 1 to claims 5), where either the extracted catechins solution or solid concentrate is added as an additive to a beverage including cola, mineral, artesian, or purified water, coffee, pre-mixed coffee solid concentrate, fruit juice, wine, beer, pre-mixed soup concentrate