SPECIFICATION

PULSATING TIME VARYING FREQUENCY ELECTROMAGNETIC WAVE COMPONENTS FOR TASTE ENHANCEMENT OF FOODS AND BEVERAGES

Technical Field ~~of the Invention~~:

The present invention is a food and beverage enhancement method and system which more specifically relates to the application of pulsating time varying frequency electromagnetic (EM) wave field components for enhancement of antioxidizing property and taste of foods and beverages. The system comprises at least one power supply unit, a printed circuit board (PCB) for generation of pulsating time varying electromagnetic wave, and a foods and beverages treatment unit. The treatment unit provides a time-varying EM field for the treatment of foods and beverages and comprises a conductor probe unit and/or coil units. The conductor probe unit provides a high capacitive and electric EM field and an ionic/electron wave current in electrolytes such as drinks. The coil units of various wiring configurations can be programmed to generate electric and magnetic EM fields of different strengths. Different time-varying frequency ranges of the EM field can be programmed by coupling to different PCBs. These different PCBs are programmed to generate varying EM wave frequencies (i.e., low, medium, high).

Background ~~of the Invention~~:

Good taste or flavor, nutritious, and healthy (including antioxidizing content (antioxidants)) are desirable qualities of foods and beverages as required by consumers, the Foods and Beverages (F&B) industry, F&B retail outlets, food stalls, restaurants and homes. Conventionally, food and beverages are made more palatable by the addition of salt, sugar, or other additives to either cooked or uncooked foods. Very often, due to the intensity of the original flavor of the ingredients, or in order to suppress the undesirable taste, more sugar, salts, artificial flavors or additives are added. Such a method of enhancement of taste and flavor is unhealthy and causes long term health issues. For example, bakeries and beverage makers, though fully aware of the health hazard of too

Another prior art is disclosed in United States Patent No. 9873097 B1 issued to Boris Dushine, wherein a system and method for automatically aerating drinking products, particularly wine, suitable home, business and/or industrial use is described. The system of the said invention is specifically designed for aerating wine for human consumption and includes a multipurpose stirring, storing and serving vessel having a captive magnetic stirring impeller coupled thereto and a programmable magnetic stir plate adapted for use therewith. However, like the previous prior art, Dushine's patent do not affect the taste or flavor of foods or beverages and, in fact, make the wine more oxidizing.

The above prior arts are only for liquid and have no feature for treating solid foods or changing the taste of foods. They cannot enhance the beneficial antioxidizing property of foods and beverages or convert oxidizing drinks to antioxidizing. Although magnetic stirrer is used in the prior art, the purpose of the magnetic stirrer is to provide the mechanical rotation stirring movement instead of using it to alter the biological or chemical structure of the foods and beverages. None of these prior arts can solve the antioxidizing and taste enhancement issues of F&B.

In view of the negative health impact of the current practices by F&B industries of using more additives, sugars, salts, MSG or other chemicals to enhance the taste or improve the antioxidizing property of foods and beverages, there is a necessity to find a solution without using, or at least minimizes using chemicals, additives, or artificial flavor.

~~Object of the Invention:~~Summary:

It is therefore a main object of the present ~~invention~~ disclosure to provide for a system and method that employs pulsating time varying frequency electromagnetic wave components for the enhancement of the antioxidizing property and taste of foods and beverages, which solves the problem of the prior arts without using chemicals, sugar, salt or artificial additives, etc.

In a first aspect, the present disclosure provides a pulsating time varying frequency electromagnetic wave components for enhancement of taste of foods and

beverages comprising a power supply unit, a printed circuit board connected to said power supply unit and conductor probe units connected to said printed circuit board characterized in that said conductor probe units are taken from a group consisting of straight rods, plates, meshes and coils.

In a second aspect, the present disclosure provides a method of enhancing taste of foods and beverages using pulsating time varying frequency electromagnetic wave components comprising the steps of: supplying power to a printed circuit board connected to a power supply unit; connecting conductor probe units to the printed circuit board, and subjecting foods and beverages to the conductor probe units wherein said conductor probe units are taken from a group consisting of straight rods, plates, meshes and coils.

Another ~~object~~ example of the present ~~invention~~ disclosure is to provide a treatment system using pulsating time varying frequency electromagnetic waves coupling to conductive probes

and/or inductor coils to produce different strengths of electric, magnetic component fields and ionic currents for antioxidizing and enhancing the taste of foods and beverages. Said system consists of:

1) a power supply unit;

2) a pulsating time varying frequency electromagnetic (EM)wave generating printed circuit board (PCB); and

3) a treatment unit which can be either one or combination of conductive probes, inductor coils of different coiling configurations.

At least one power supply unit is used in the system. The power supply unit is used to supply low voltage Direct Current (DC) to the printed circuit board to generate pulsating time varying electromagnetic waves. The power supply unit can be the conventional winding type transformer rectifier or an electronic pulse switching transformer rectifier. The transformer rectifier steps down the 110V, 230V or 440V alternative current (AC) to a low voltage such as below 60 volt and the AC current is rectified into DC current. DC generator will produce the DC current directly. Wet or dry battery can also be used as a power supply unit. However, the dry battery can be useful for portable treatment units. In general, the maximum DC voltage from the power supply output to the PCB input should not exceed the voltage rating of the PCB components, and it must be within the safety limit requirement. Typically, the DC voltage from the power supply unit to the PCB is less than 60 volts.

Another ~~object~~ example of the present ~~invention~~ disclosure is to provide a system and method for the antioxidation and enhancement of taste of foods through the use of a PCB that generates suitable and that, through the PCB that generates suitable pulsating time varying frequency electromagnetic wave components and inputs these wave components to the system to create the EM field and/or ionic current.

The PCB may be analog or digital in design. Primarily, the PCB must be programmed to suit the different types of EM field loads in the enhancement treatment unit. The EM field load may be high or low in electric field and may be low or high in magnetic field. In the case of the conductive probe treatment in the treatment unit, the PCB shall be

programmed to take high capacitive and/or resistive load to produce high electric field and ionic current in the electrolyte.

The EM wave produced by the PCB can be square, triangular, sine or other waveform and the frequency range may be between 1Hz to 1MHz. The frequency range may preferably be between 100Hz to 500 KHz. The frequency range may be subdivided into low frequency, mid and high frequency range.

The time varying sweeping frequency for the time varying frequency wave is in the range of 1 to 1000 Hz and preferably between 10 Hz to 100Hz.

Another ~~object~~ example of the present ~~invention~~ disclosure is to provide for a pulsating time varying frequency electromagnetic wave components for enhancement of taste of foods and beverages wherein said printed circuit board is adapted to produce low frequency range time varying wave.

Another ~~object~~ example of the present ~~invention~~ disclosure is to provide for a pulsating time varying frequency electromagnetic wave components for enhancement of taste of foods and beverages wherein said printed circuit board as adapted to produce medium frequency range time varying wave.

Another ~~object~~ example of the present ~~invention~~ disclosure is to provide for a pulsating time varying frequency electromagnetic wave components for enhancement of taste of foods and beverages wherein said printed circuit board as adapted to produce high frequency range time varying wave.

Another ~~object~~ example of the present ~~invention~~ disclosure is to provide for a pulsating time varying frequency electromagnetic wave components for enhancement of taste of foods and beverages wherein said conductor probe units are adapted to create in its vicinity time varying electromagnetic field.

Another ~~object~~ example of the present ~~invention~~ disclosure is to provide for a pulsating time varying frequency electromagnetic wave components for enhancement of taste of foods and beverages wherein said conductor probe units are adapted to produce high electric field and low magnetic field.

Another ~~object~~ example of the present ~~invention~~ disclosure is to provide for a pulsating time varying frequency electromagnetic wave components for enhancement of taste of foods and beverages wherein said conductor probe units are adapted to produce pulsed ionic/electron wave in an electrolyte.

Another ~~object~~ example of the present ~~invention~~ disclosure is to provide for a pulsating time varying frequency electromagnetic wave components for enhancement of taste of foods and beverages wherein said power supply unit is adapted to provide direct current power to the printed circuit board.

Another ~~object~~ example of the present ~~invention~~ disclosure is to provide for a pulsating time varying frequency electromagnetic wave components for enhancement of taste of foods and beverages wherein said printed circuit board is adapted to convert the direct current power into various frequency ranges of time varying wave.

Another ~~object~~ example of the present ~~invention~~ disclosure is to provide for a method of enhancing taste of foods and beverages using pulsating time varying frequency electromagnetic wave components comprising the steps of:

supplying power to a printed circuit board connected to a power supply unit;

connecting conductor probe units to the printed circuit board, and

subjecting foods and beverages to the conductor probe units wherein said conductor probe units are taken from a group consisting of straight rods, plates, meshes and coils.

Another ~~object~~ example of the present ~~invention~~ disclosure is to provide for a method of enhancing taste of foods and beverages using pulsating time varying frequency electromagnetic wave components wherein said power supply unit is taken from a group consisting of pulsed switching power supply, wet battery, dry battery and transformer rectifier.

Another ~~object~~ example of the present ~~invention~~ disclosure is to provide for a method of enhancing taste of foods and beverages using pulsating time varying

frequency electromagnetic wave components wherein said printed circuit board is adapted to produce low frequency range time varying wave.

Another ~~object~~ example of the present ~~invention~~ disclosure is to provide for a method of enhancing taste of foods and beverages using pulsating time varying frequency electromagnetic wave components wherein said printed circuit board as adapted to produce medium frequency range time varying wave.

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Another ~~object~~ example of the present ~~invention~~ disclosure is to provide for a method of enhancing taste of foods and beverages using pulsating time varying frequency electromagnetic wave components wherein said conductor probe units are adapted to create in its vicinity time varying electromagnetic field.

Another ~~object~~ example of the present ~~invention~~ disclosure is to provide for a method of enhancing taste of foods and beverages using pulsating time varying frequency electromagnetic wave components wherein said conductor probe units are adapted to produce high electric field and low magnetic field.

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Another ~~object~~ example of the present ~~invention~~ disclosure is to provide for a method of enhancing taste of foods and beverages using pulsating time varying frequency electromagnetic wave components wherein said power supply unit is adapted to provide direct current power to the printed circuit board.

Another ~~object~~ example of the present ~~invention~~ disclosure is to provide for a method of enhancing taste of foods and beverages using pulsating time varying frequency electromagnetic wave components wherein said printed circuit board is adapted to convert the direct current power into various frequency ranges of time varying wave.

Yet, another ~~object~~ example of the present ~~invention~~ disclosure is to provide for a pulsating time varying frequency electromagnetic wave components for enhancement of taste of foods and beverages to resolve the above taste issues of the prior arts by better extraction/exploration and enrich the original tastes content of raw materials.

Yet, another ~~object~~ example of the present ~~invention~~ disclosure is to provide for a pulsating time varying frequency electromagnetic wave components for enhancement of taste of foods and beverages that improves the taste, aroma and flavor reactions with water contents in food and drinks; and saliva enhancing the taste of starch content, sugar, salt and other chemical taste enhancers or additives.

Yet, another ~~object~~ example of the present ~~invention~~ disclosure is to provide for a pulsating time varying frequency electromagnetic wave components for enhancement of taste of foods and beverages that enables changing the beverages and liquid foods oxidation and reduction potential either to more reductive or oxidative potential using the capacity and resistive electromagnetic field components treatment. The present invention can also convert drinks from oxidizing to anti-oxidizing making.

Yet, another ~~object~~ example of the present ~~invention~~ disclosure is to provide for a pulsating time varying frequency electromagnetic wave components for enhancement of taste of foods and beverages that uses only physical time varying frequency pulsed magnetic, electric, capacity field method to better extract the content and essence in the ingredients including meat and vegetables, yet without further addition of sugar, salts, flavor additives or chemicals.

Still, another ~~object~~ example of the present ~~invention~~ disclosure is to provide for a pulsating time varying frequency electromagnetic wave components for enhancement of taste of foods and beverages that better activates and enhances the taste, aroma, texture of food and beverages in the production and human taste sensory process.

Still, another ~~object~~ example of the present ~~invention~~ disclosure is to provide for a pulsating time varying frequency electromagnetic wave components for enhancement of taste of foods and beverages wherein oxidative and reductive potential (ORP) of drinks and liquid food can be selectively changed to produce the desirable effect.

Still, another ~~object~~ example of the present ~~invention~~ disclosure is to provide for a pulsating time varying frequency electromagnetic wave components for enhancement of taste of foods and beverages that also maximizes the extraction of full contents and nutrient from raw ingredients and fully explore the original taste of the raw ingredients hence requires lesser amount of MSG, salts, sugar, artificial flavor addition, yet the fully spectrum of foods and beverages tastes still can be realized. The good flavor of food in general refers to three key factors; the taste, aroma/fragrance and texture. Tastes of foods and beverages consist of five basic tastes namely, sweetness, saltiness, sourness, bitterness and umami. Most tastes are combination of two or more of these basic tastes. These basic tastes each have its own characterized chemical composition/component. These chemical constituents when in contact with taste buds of the human tongue, they will either attached onto the taste bud cells or migrate through the taste bud ion channels. Taste nerve senses these chemical taste signals and sends through the sensory system to brain hence detected the taste. The taste transmittal process from the food reactions through taste bud membrane via the human sensory system to brain is determined by the chemical and ionic reactions energy and rates/ potential difference/electrons transfer process. It also depends on the concentration of the various chemical components in the food and beverages which mixes the senses and intensity of taste creating different final tastes.

Still, another ~~object~~ example of the present ~~invention~~ disclosure is to provide for a pulsating time varying frequency electromagnetic wave components for enhancement of taste of foods and beverages that provides a fast and efficient way to better extract the food and drinks essences/flavor without using excessive heat/high temperature or extraction chemical yet preserving the desirable nutritious/beneficial content in food and drinks.

Still, another ~~object~~ example of the present ~~invention~~ disclosure is to provide for a pulsating time varying frequency electromagnetic wave components for enhancement of taste of foods and beverages that uses the time varying pulsed wave with the correct combination of various wave components/parameters and strength to facilitate better extraction of contents from plant and meats and other raw materials.

Still, another ~~object~~ example of the present ~~invention~~ disclosure is to provide for a pulsating time varying frequency electromagnetic wave components for enhancement of taste of foods and beverages wherein the time varying pulsed wave treatment methods increases the cell wall permeability of meats and plants raw ingredients hence facilitate easier extraction of content from cells. It can be direct or indirect contact extraction process. The time varying wave treatment can be used in conjunction or complement the existing heating process hence reducing the high temperature negative effects and preserving the nutrients in food and beverages.

Still, another ~~object~~ example of the present ~~invention~~ disclosure is to provide for a pulsating time varying frequency electromagnetic wave components for enhancement of taste of foods and beverages wherein each of the five [5] different basic tastes can be individually controlled by using combination of different ranges of time varying pulses/frequency wave with different strength of electric/magnetic field components or ionic/electron wave current. The treatment can selectively use either one or combination of all five [5] different tastes treatment.

Still, another ~~object~~ example of the present ~~invention~~ disclosure is to provide for a pulsating time varying frequency electromagnetic wave components for enhancement of taste of foods and beverages that provides various adjustments to facilitate easier choice of taste or flavor treatment settings by the consumers to obtain their most preferred taste setting for different type of food and beverages.

Brief Description of the Drawings:

The present invention for a pulsating time varying frequency electromagnetic wave components for enhancement of taste of foods and beverages will be further described with reference to the accompanying drawings, wherein like-reference numerals refer to like parts in the several views, and wherein

Figure 1 is a plan view of the present invention for a pulsating time varying frequency electromagnetic wave components for enhancement of taste of foods and beverages; and