A Coffee Alternative that Maximizes the Beneficial Effects of Coffee

Background:
In recent years, green coffee bean extract from unroasted coffee beans has attracted worldwide attention as a dietary supplement. The green coffee beans provide chlorogenic acid (CGA) antioxidants that have been clinically proven to beneficially modulate sugar metabolism and the insulin response. CGA may also assist in controlling blood pressure and heart disease. However, green coffee beans have an unfavorable flavor profile. Roasting of green coffee beans to improve its flavor for consumption, aroma, and color (as in drinking coffee) degrades CGA, necessitating the packaging of unroasted coffee extract as capsules.

The current invention relates to a new method for partially baking ("par-baking") the green coffee beans into a coffee flour that not only preserves the CGA levels, but retains the caffeine. This versatile product can have multiple types of uses. The milled beans are palatable for use as an ingredient directly in food and beverages including baked goods, chewing gum, mints, or other food products. It can, therefore, be used as a coffee alternative since it retains the same caffeine content as a cup of coffee when used in adequate amounts. The par-baked, milled coffee bean can also be packaged as tablets or capsules at varying doses. Alternatively, the coffee flour may also be combined with skinceuticals or cosmetics for its beneficial antioxidant effect on skin. The coffee flour has a low cost of production with multiple health and/or dermatological benefits and uses.

Summary:
- Invention involves partial baking ("par-baking") of green coffee beans in air or other gaseous environments at temperatures significantly lower than traditional roasting.
- Par-baking conditions render the otherwise tough green coffee beans easier to mill, even into powder form with granules of desired size, without much frictional heat or loss of CGA.
- Up to four times of CGA is retained compared to regularly roasted coffee beans.
- Par-baked, milled green coffee beans have unexpected characteristics including a pleasant nutty flavor, mild yellowish mustard or tan color and reduced moisture content.
- Residual moisture enables fast release of CGA in water or other aqueous foods.
- Decaffeinated green coffee beans can also be par-baked to provide a caffeine-free food ingredient.

Advantages:
- Versatile enough to be included in food products, capsules, and/or skin products.
- Ideal for adding to baked goods, food, and beverages without a gritty mouth feel.
- Improved flavor and odor of green coffee beans.
- Unlike traditional coffee roast, mild color allows addition to various food products without altering the appearance.
- Better chemical stability and shelf-life, without the need for desiccant, due to reduced moisture.
- CGA is thought to be beneficial in modulating sugar metabolism, controlling blood pressure and possibly treating heart disease and cancer.
- Easily flavor-modified with sugar, high intensity sweeteners, flavor extracts or other agents that can alter flavor/aroma.