

**PREPARATION OF MILK AND COFFEE
COMPOSITION FOR BEVERAGE
PREPARATION**

BACKGROUND OF THE INVENTION

The present invention relates to a method of production of an instant beverage composition of the white coffee or coffee substitute type.

Instant beverages of the white coffee or coffee substitute type may be produced by dry mixing of a basic powder, generally a coffee extract and a soluble coffee or coffee substitute powder. Soluble coffee or substitute may have been added to the liquid extract concentrate before final drying. During the preparation of the basic powder, stabilising salts are added to the milk to be preheated and then sterilised by UHT, in order to prevent the flocculation of the proteins both during the preparation of the powder and during the reconstitution of the beverage in the presence of coffee.

Dry mixing has a number of drawbacks. It is difficult to mix the powders in a completely homogeneous way. On reconstitution, moreover, the powder mixture does not always dissolve to provide a beverage whose appearance is completely homogeneous. There is also a loss of aromas.

It has been proposed, for instance in U.S. Pat. No. 2,398,081, to mix the coffee and milk by wet methods in the form of concentrates that are then dried to provide a homogeneous powder. This method makes it possible to avoid the additional stage of dry mixing. It has come up, however, against problems in the sense that it has not been possible completely to eliminate a visible flocculation of the proteins when the beverage is reconstituted with hot water.

SUMMARY OF THE INVENTION

The object of the invention is to produce an instant white coffee or coffee substitute which dissolves better and has organoleptic properties better than known instant white coffees or coffee substitutes when reconstituted with hot or boiling water.

The invention therefore relates to a method of production of a beverage composition of the white coffee or coffee substitute type, in which milk or a milk derivative in concentrated form is mixed by wet methods with a coffee or coffee substitute and in which the mixture is dried by spray drying, characterised in that the milk or the derivative is heat treated before and after concentration in order to carry out a controlled flocculation of the proteins.

**DETAILED DESCRIPTION OF THE
INVENTION**

In the remainder of this description and in the claims, the term coffee is used to mean actual coffee or a coffee substitute such as chicory, for instance, or even a mixture of these products.

The term "milk" is used to mean milk itself, whether whole or skimmed to some extent, natural or reconstituted from powder. The term "milk derivative" is used to mean a cream or coffee whitening agent comprising, for instance, lactic proteins, lactose and, where appropriate, a vegetable fat.

In order to implement the method, in the case of whole milk, the milk is standardised, where necessary, i.e. the respective quantities by weight of fatty matter and non-fatty solids are adjusted to the desired values by the addition,

according to need, for instance of skimmed milk, cream or butter oil. In the case of a derivative, the quantities of proteins, for instance of casein and whey proteins, demineralised where necessary, and lactose are adjusted. The quantity of lactic or vegetable fatty matter, previously melted where appropriate, is adjusted preferably after preheating of the mixture to 50°-80° C.

Once standardisation is complete, the mixture is heat treated at 90°-120° C. for 1 to 1200 seconds by direct heating, for instance by direct injection of vapour, or indirectly by means of a tube or plate heat exchanger, where necessary combined with a standby tube. This is the first heat treatment. The direct injection of vapour at 95°-115° C. for 5-20 seconds, followed by an expansion on input into an evaporator is preferred. The liquid is then concentrated in a single or preferably multiple effect falling-flow evaporator to a dry matter content of 40-55% by weight.

After concentration, the concentrate may be cooled, for instance to 15°-20° C., and stored, where necessary, in a tank while awaiting subsequent processing.

At this stage, it is necessary to monitor the pH and free calcium content. A controlled flocculation of the whey proteins can be carried out correctly only if, prior to the subsequent heat treatment, the pH is between 5.8 and 6.3 and the free calcium content is between 3 and 5 mmoles/l. It is therefore necessary, where appropriate, to acidify the solution by means of a food acid, for instance lactic, phosphoric or citric acid. If necessary, calcium may be added, for instance in the form of calcium chloride. The concentrate, preferably with a pH of 6.1-6.4, typically approximately 6.25, is heat treated in a similar manner to the previous heat treatment, preferably by direct injection of vapour at 90°-125° C. for 5-20 seconds, for instance at approximately 105° C. for approximately 10 seconds. This treatment of the concentrate, or second heat treatment, causes a controlled flocculation of the whey proteins whose purpose is to prevent a subsequent perceptible flocculation of these proteins when the beverage is reconstituted.

After cooling, for instance by expansion at approximately 70°-80° C., a liquid coffee extract, for instance, representing up to 25% by weight of the final product in terms of dry matter is added to the lactic concentrate. This addition may take place in a tank, by charging or preferably directly on line and may take place in one or several stages and if necessary, in progressive quantities.

According to a first variant of the addition of coffee, which is preferred, a coffee concentrate is preheated to the same temperature as the lactic concentrate, they are mixed and the mixture is then subjected to the second heat treatment as defined above.

According to a second variant of the addition of coffee, the latter is divided into two portions, one being added prior to the second heat treatment and the other forming the supplement after the second heat treatment.

After the addition of coffee, the pH is 5.8-6.3 depending on the quantity of coffee added. The mixture may be homogenised, in one or two stages, for instance at 20-200 bar, and preferably in two stages, for instance at approximately 110 bar at the first stage and approximately 50 bar at the second stage. This operation is optional, although preferred.

Optionally, an inert gas under low pressure may also be injected into the concentrate in order to lighten the structure of the powder so that it can subsequently be more readily dissolved.

Drying takes place by spray drying, at a pressure of 20-300 bar, preferably at approximately 80 bar, in a tower in a current of hot air.