

**DIRECTLY EDIBLE AND RAPIDLY  
REHYDRATABLE COMPACTED AND  
DEHYDRATED FOOD BAR AND METHOD OF  
MAKING THE SAME**

The invention described herein may be manufactured, used, and licensed by or for the Government for governmental purposes without the payment to us of any royalty thereon.

**BACKGROUND OF THE INVENTION**

This invention relates to a method of making compacted, dehydrated food bars which are directly edible without prior rehydration or which may be quickly rehydrated substantially completely in water at about room temperature or even lower temperatures. The invention also relates to the compacted, rapidly rehydratable, dehydrated food bars.

Compacted, dehydrated food bars have been utilized by the Armed Forces in field rations, by astronauts during space explorations, by earth explorers, hikers, and others who must carry their food supplies along with them and who need to conserve space as much as is reasonably possible without sacrifice in the nutritional qualities of their food supplies. An outstanding advantage of rations in this form is that they provide highly concentrated nutritional values in compact and convenient forms. They also may be stored for considerable periods of time without spoilage, especially when the moisture contents of the bars are sufficiently low to prevent growth of microorganisms therein and the bars are maintained in a moisture-impermeable container or package.

One of the outstanding problems encountered with food bars is that when they are compacted by application of pressure in the formation of the bars, if the pressure applied is sufficiently high to cause the food bar-forming ingredients to adhere well enough to form a food bar which is not too fragile to handle in the normal activities of the user of the food bar, the resulting compacted food bar is difficult to rehydrate, especially in cold water, and is so hard that direct eating of the food bar is virtually impossible. In some cases such food bars have been known to cause breakage of teeth if they were eaten without prior rehydration and yet it may not be practical under certain field conditions to take the time to heat a quantity of water to rehydrate a food bar sufficiently to render it edible in such instances.

It is, therefore, an object of the invention to provide a method of making compacted and dehydrated food bars which may be directly eaten without prior rehydration or which may be rapidly rehydrated in bar form in cold water, particularly water at about room temperature or at the ambient temperature in which the military user or a sportsman or other user would customarily be operating.

It is also an object of the invention to provide compacted, dehydrated food bars which may be directly eaten without prior rehydration thereof or which may be rapidly rehydrated with cold water, particularly water at about room temperature or at the ambient temperature in which the military user or a sportsman or other user would customarily be operating.

Other objects and advantages will be apparent from the following description of the invention, and the novel features will be particularly pointed out hereinafter in connection with the appended claims.

**SUMMARY**

The compacted, dehydrated food bars of the invention are prepared by incorporating potato particles, preferably flavored, and preferably as dice, which have been blanched, freeze-vacuum-dehydrated to a moisture content below about 4 percent by weight, and thereafter equilibrated with water until they reach a moisture content of from about 5 to about 15 percent by weight, in a food bar preparation mixture in a proportion by weight of about 10 to about 20 percent potato based on the freeze-dehydrated form to about 90 to about 80 percent of the non-potato food bar-forming ingredients, and thereafter compressing the mixture of the potato particles with the non-potato food bar-forming ingredient mixture into a bar and redrying the compressed food bar under vacuum to a moisture content below about 4 percent by weight to produce compacted and dehydrated food bars having densities, for example, of from about 1 gm per cc to about 1.4 gm per cc. The compression of the food bars is carried out at from about 800 to about 1500 psi, using a dwell time of from about 5 to about 20 seconds.

**DESCRIPTION OF THE PREFERRED  
EMBODIMENTS**

The following examples illustrate the preferred practice of the invention, both as to method and product:

**EXAMPLE I**

Raw U.S. No. 1 grade Idaho Russet potatoes were washed, peeled and submerged in an aqueous solution containing about 1.0 gram of sodium meta bisulfite per gallon to prevent darkening of the peeled potatoes. The peeled potatoes having sodium meta bisulfite solution over their exterior surfaces were diced in a potato dicer to form substantially cube-shaped particles or dice of about 0.375 inch on each side and the dice were immediately submerged in an aqueous solution of sodium meta bisulfite of the same concentration as above. The potato dice were removed from the aqueous solution of sodium meta bisulfite and blanched for about 1.5 to 2 minutes by submerging them in an aqueous solution of a flavoring ingredient described below at from about 170°F. to about 212°F. The blanching solution had been brought to a boil and had been removed from the source of heat immediately prior to submerging the potato dice therein. The flavoring agent employed was lemon juice crystals, manufactured by Plant Industries, Inc., Anaheim, California, and was employed to mask the natural potato flavor in the potato dice. It was employed in a concentration of about 6 ounces of lemon juice crystals per gallon of water.

The blanched potato dice were removed from the hot aqueous solution after the blanching period and immediately cooled in a cold chamber to 40°-50°F. The flavored aqueous solution used in blanching the potato dice was retained and permitted to cool to about 40°-50°F. The cooled potato dice were then returned to the cooled, flavored aqueous solution and permitted to soak therein for from about 2 to about 4 hours to absorb more of the lemon flavor without being cooked. The potato dice were then removed from the flavored aqueous solution and drained free of excess solution, then freeze-vacuum-dehydrated in a conventional manner employing a shelf or platen temperature in the vacuum dehydrator of about 80°F., the potato dice having