



**National Research Development Corporation**

## **HERBAL GHEE**

## **Technology offer**

### **BRIEF DESCRIPTION OF THE PROCESS**

Arjuna, a traditional Indian herb, is used widely for its heart related benefits: it regularizes the heartbeats, strengthens heart muscles, reduces bleeding and inflammation. Development of a commercially viable technology for manufacturing Herbal Ghee incorporating active components of Arjuna was therefore developed.

The developed ghee was found sensorily similar to the market ghee. It had overall acceptability score of 85.1 compared to the control (90.8). It complies to all the conditions laid down by PFA and AgMark (BR Reading 42, Moisture 0.13%, FFA 0.36%, RM value 28.2). The Arjuna ghee was found to be highly stable (8 days at 80oC) as compared to control ghee (2 days at 80oC as noted in accelerated storage studies). This is due to the fact that Arjuna extract contains several antioxidants like polyphenols and terpenoids in addition to phytosterol which are also beneficial in conditions of cardiovascular diseases (CVD) and blood pressure. Thus, Arjuna ghee can be consumed instead of normal ghee in order to reduce the risk of CVD and to boost up the immune system.

### **SCIENTIFIC/TECHNICAL BASIS FOR THE INVENTION:**

Arjuna herbs contain active constituents and Administration of Arjuna on a regular basis strengthens the heart and helps in maintaining it in optimum conditions. Ghee is considered as the best among all fats due to its ability to absorb all the medicinal properties of the herbs with which it is fortified without losing its own qualities. This could therefore serve as an efficient carrier of phytochemicals from the herbs.

### **It offers following advantages:**

- (a) It decreases the level of triglycerides and cholesterol, and recovers the levels of HDL
- (b) It acts as an anti-ischemic agent
- (c) It acts as wellsa as the drug isosorbide mononitrate in chronic stable angina
- (d) It has been established through animal studies that Arjuna relieves myocardial necrosis in rats
- (e) It modulates platelet aggregation
- (f) It acts as an effective antioxidant
- (g) It also contains folic acid.

## NOVELTY OF THE INVENTION

So far no process has been developed whereby the active principles of the herb Arjuna can be incorporated into ghee without essentially altering the sensory status of the later. Ayurvedic herbal ghee is medicinal preparation carrying the herb extract which renders the product sensorily much different from normal ghee. The functional components of the herb Arjuna are incorporated during ghee making requiring no post-clarification treatment. Colour and flavour of the product are similar to those of conventional ghee unlike the presently marketed herbal ghee which has an unacceptable flavour and appearance. Simple, industrially adaptable process, with a fat recovery of about 96% which is commercially

## ADVANTAGES OVER OTHER KNOWN ALTERNATIVES INCLUDING IMPORTED ALTERNATIVES

Presently, the **herbal ghee being marketed in the country** is mostly sold as medicine for cure of certain ailments and is therefore classified as '**medicinal ghee**'. They have **typical flavour, bitter or pungent taste with a dark colour**. Such therapeutic preparations are therefore not acceptable for routine use. Preparations which can serve as the health promoting items of the diet would therefore have to be essentially prophylactic foods based on the same principles. There was thus a need for developing **processes for large-scale manufacture of ghee incorporating herbal properties, but without affecting sensory and physical properties**. However, **overcoming the adverse impact of herb incorporation on the sensory profile of the product was the major challenge**. Development of **Arjuna herbal ghee with appropriate technological alterations** was a **successful attempt** in this direction.

## DETAILED DESCRIPTION:

Arjuna herbal ghee was developed as a health food combining the medicinal value of *Arjuna terminalia* and the nutritional virtues of ghee.

### **Process Standardization for Herbal Ghee**

The product was obtained by optimization of herb powder and SNF and ripening process of cream so as to obtain herbal ghee with optimum functional properties and sensory quality. The levels of these ingredients in the product was optimized by the mathematical process outline in Central Composite Rotatable Design (CCRD) with two independent variables on the basis of sensory responses namely flavour, body and texture, colour and appearance, suspended solids and overall acceptability. During optimization of the process, the effect of levels of herb and milk solids-not-fat (SNF) on the physicochemical and rheological properties of The sensory score for suspended solids ranged from 9.0 to 9.9 (max. score, 10).

## **THE STANDARDIZED PROCESS FOR THE MANUFACTURE OF HERBAL GHEE (ARJUNA GHEE)**

Adjustment of SNF	culture
Standardization & Pasteurization	Incubation
Cooling	Arjuna bark
Addition of lactic Cooling	Grinding to powder
Crystallization	
Packaging	
Storage in dry place	
Water	
Cow cream	
Drying	
Ghee boiler	
Clarification (To moisture level of $\leq 0.5\%$ )	
Filtration	

### **Yield of Arjuna Ghee**

The total recovery of fat during the manufacture of ghee as per the standardized procedure was ~ 90%, which is comparable to the fat recovered (90- 95%) in the conventional Direct Cream method followed in many commercial industries