

DEVELOPMENT OF BUTTER

Dr. Narendra K. Nayak

Department of Livestock Products
Technology College of Veterinary
Sc., & A.H., Mhow
Indore (M.P.)
(NDVSU)

Butter

As per Federal standard Butter means a food product which is exclusively made from milk or cream or both, with or without common salt and with or without additional colouring matter and containing not less than 80 per cent by weight of milk fat, all tolerances having been allowed for.

According to PFA rules (1976), table or creamery butter is the product obtained from cow or buffalo milk or a combination thereof, or from cream or curd obtained from cow or buffalo milk, or without the addition of common salt and annatto or carotene as colouring matter.

Specifications: PFA Standard

- It should be free from other animal fats, wax and mineral oils, vegetable oils, and fats.
- It should not contain any preservatives except common salt.
- It should not contain any colouring matter except annatto or carotene.
- It must contain not less than 1.5 per cent by weight of curd, and not more than 3 per cent by weight of common salt.
- Total diacetyl (if added) must not exceed 4 ppm.
- Sodium carbonate/bicarbonate, calcium hydroxide (if added) should not exceed 0.2 per cent by weight of butter.

Composition of Butter

Composition of Indian Butter Composition of Salted Butter

- Butter fat-80.2 per cent,
- Moisture-16.3 per cent,
- Salt-2.5 per cent and
- Curd-1.0 per cent

- Butter fat-80-82 per cent,
- Moisture-15.6-17.6 per cent,
- Salt-2.5 per cent,
- Lactose-0.6 per cent and
- Milk ash-0.2 per cent.

- Butter is a composite mass containing 80 per cent milk fat and not more than 16 per cent moisture with 2 per cent curd and 2 per cent salt. The butter making process may be considered as a technique to convert small quantities of milk fat present in milk to a composite mass of fats. The changes are physical and change of phase where fat in water emulsion is changed to water in milk fat emulsion.
- A good marketable butter depends primarily on the use of pure, clean, and fresh initial product and maintenance of cleanliness in every thing that comes in contact with it.

Principle

If milk is left for some time to stand, a layer of cream appears at the top. The nature of the cream is the same everywhere except the quantity of fat in it. The fat remains the same as it was in milk but fat globules are only pressed together. If we go on increasing the fat content of cream up to 80 per cent, the product will not be butter but a plastic cream because the fat in cream has still a layer of lecithin and proteins as envelope and remain as emulsion in the moisture. When the envelope is broken, the phase changes from fat in water emulsion to water in fat emulsion and we get butter.

Flow of Process

Milk → separated to get cream → treatment of cream → conversion to butter → storage.

- **Manufacturing Flow Sheets**

Desi Butter

- Milk → curd → added with cold water → beaten by matris → added with wash water → butter. Creamery Butter

Milk → separator → cream → standardized → salted



Butter
Moisture
Test



Blending Dry Brine
 salting salting

Butter

Moisture test blending dry salting brine salting →
Bulking → bulk storage → retail processing →
patting and extruding → small packages.

Recombination Process

Butter oil → added with 16 per cent reconstituted
milk → heated to 162.5⁰F → homogenized
(10.5kg/cm²) → cooled to 30⁰C → added with 2 per
cent salt → mixed well → cooled to 10⁰C → chilled
to 4⁰C → extruded → standardized → bulk →
package → storage → retail package.

Types of Butter

- Pasteurized cream butter-obtained from past sweet cream
- Ripened cream butter-obtained by churning ripened cream, i.e., inoculating the cream with a butter culture
- Unripened cream butter-made from unripened cream
- Salted butter-butter to which salt has been added
- Unsalted butter- butter containing no salt
- Sweet cream butter- acidity of churned cream is within the limit of 0.20 per cent

CONTI....

- Dairy butter- made from unpasteurised sour cream
- Creamery butter-made in a creamery or dairy factory and uniform in quality.
- Fresh butter- made freshly and not kept in cold storage.

Essentials for Manufacture of High Grade Butter

- Good quality milk or cream
- Efficient
pasteurization/vacreation/deodorization/starter culture
- Controlled ripening/addition of good dairy flavours
- Careful and uniform manufacture
- Modern/clean and sterilized equipment
- Maintaining proper storage temperature

- Strict vigil on chemical and bacteriological tests including consumables
- Attractive packing.

Butter Make-Up

- Normal Salted Butter
 - Fat 80-82%
 - Water 15.6-17.6%
 - Salt 1.2%
 - Proteins, Calcium, Phosphorous 1.2%
 - Also contains fat soluble vitamins A, D, E

Making Butter

- From storage tanks the cream goes to pasteurization
 - This destroys enzymes and microorganisms that would impair the keeping quality of the butter
- Next, ripening
 - Here the cream is subject to a program of heat treatments designed to give the fat the necessary crystalline structure so it solidifies on cooling
 - Takes 12-15 hours
- Churning
 - Cream is violently agitated
 - This breaks down the fat globules, causing the fat to coagulate into butter grains, leaving the liquid part (buttermilk)
- Butter is salted and worked to ensure even distribution
- Packaged
- Sent to cold storage

Butter Churns From the Past



Today's Butter Churn



THANKS