

NUTRITION

BREAST FEEDING

NATIONAL INSTITUTE OF NUTRITION INDIAN COUNCIL OF
MEDICAL RESEARCH

Breast milk is the natural food produced by the mother soon after the birth of her baby. The average quantity of milk secreted during the first six months in rural Indian mothers is about 600 ml or equal to 4 glasses of milk. The breast milk output decreases as the child becomes older.

<u>Age of the baby</u>	<u>Quantity of milk produced</u>
6 - 12 months	600 ml or 20 ozs
1 - 2 years	450 ml or 15 ozs
2 - 3 years	425 ml or 14 ozs

The nutritive value of breast milk is better than buffalo's or cow's milk. During the first two days after child birth the yellowish fluid that is secreted is known as colostrum. Many women do not feed the child with this and discard it as they hold the wrong belief that it is not good for the child. On the other hand colostrum is very nutritious and good for the child as it is a good source of vitamin A and contains substances which protect the child from diseases.

Breast milk is a wholesome and economical food for the infant. It does not require any preparation and is good from the hygienic point of view.

It is important that cleanliness of the hands and breasts be maintained by washing them before each feed. The mother should be relaxed and should sit up and hold the child at each breast for about 5 minutes, after which the child should be held up to burp.

Galactagogues are substances which are believed to help in increasing the production of breast milk and are in vogue in certain areas. Many of the commonly used galactagogues such as garlic, goat's meat, palak, khuskhus, gum arabic and jeera are harmless ingredients. However, scientific evidence does not indicate that they are of any practical use in increasing milk secretion.

The practice of breast feeding should be encouraged by all. It is important that after 4 months of breast feeding the child should be given liquid and semi-solid supplements like fruit juices, mashed cereals, vegetables, green leafy vegetables, eggs, etc., in addition to the breast milk.

After 6 months the milk secretion decreases. At the same time the food needs of the child increase. Therefore, semi-solid and solid foods should be given in addition to breast milk and not a substitute to breast milk.

In rural areas, the period of breast feeding is prolonged, from 6 months to 3 years or even longer. But it is important to note that after the 6th month, additional foods over and above breast milk are essential.

LOW - COST NUTRITIOUS SUPPLEMENTS

Breastmilk is sufficient for infant till the age of about four months. Thereafter, in addition to breastmilk, certain supplements like cereals, pulses, vegetables, eggs, meat, milk and fruits should be gradually introduced. As the child grows older, he starts eating all other food items that are eaten by adults. However it has been found that the food eaten at home by children coming from poor homes is deficient in several nutrients. It is therefore necessary that the diets are enriched by some supplements that can be prepared and fed to the child to ensure proper growth.

There are certain points to be remembered when preparing supplements for infants and pre school children.

1. The recipes are best based on locally available foodstuffs.
2. The cooking methods must be simple
3. The cost must be minimal
4. The recipes should be acceptable in taste consistency and bulk to the child as well as to the mother.
5. Together with whatever breastmilk is available, the recipes must be able to meet the need of calories, proteins and other nutrients, fully.

There are some recipes that can be used as ready mixes, some as porridges, and other preparations like upma and laddoo, that have to be cooked daily and fed to the child, and some as commercial products. Examples of a few low cost nutritious supplements for infants and preschool children are given below. They can be prepared from common cereals, pulses, nuts and oilseeds which are the cheapest sources of proteins and calories in our country.

READY MIXES:

BAJRA INFANT FOOD

INGREDIENTS:

Bajra (dehusked and roasted)	: 60 g. (4 table spoons)
Roasted green gram dhal or any other dhal	: 15 g. (1 table spoon)
Roasted groundnut	: 10 g. (2 tea spoons)
Roasted gingelly(til) seeds	: 5 g. (1 tea spoon)
Skin milk powder	: 15 g. (1 table spoon)

METHOD

Powder all the roasted ingredients individually; mix them in the proportions suggested and store in air-tight containers.

RAGI INFANT FOOD

Use 60 grams (4 table spoons) of ragi prepared as given below instead of bajra in the above formula.

Soak ragi in water overnight. Drain the water, spread the grains on a plate and allow to germinate by covering with a damp cloth for one day. Dry the germinated ragi in the sun and roast till it develops a malted flavour. Powder and store in an air-tight tin.

If skim milk powder is not available, the infant food can be made without it and stored. In such a case, 100 ml. of milk should be added to the powder at the time of preparing the porridge or laddoo and given to the child.

S A J I N A

INGREDIENTS:

Bajra (roasted)	: 60 grams (4 tablespoons)
Greengram dhal(roasted)	: 15 grams (1 tablespoon)
Sugar	: 40 grams (2½ tablespoons)

G E H U N A

INGREDIENTS:

Whole wheat	: 40 grams (2½ tablespoons)
Greengram dhal	: 25 grams (1½ tablespoons)
Groundnuts	: 10 grams (2 tablespoons)
Jaggery	: 30 grams (2 tablespoons)

METHOD

The method of preparation of these two recipes is the same. Roast all the ingredients, powder, mix well and store in an air-tight container. Whenever required take three tablespoonsful of any of these recipes and mix with a small amount of hot water and feed to the child.

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RECIPES THAT NEED TO BE COOKED

WHEAT GRAM PORRIDGE

INGREDIENTS:

Roasted wheat flour	: 40 grams (2½ tablespoons)
Powdered, roasted Bengal gram	: 25 grams (1½ tablespoons)
Powdered, roasted groundnut	: 10 grams (12 tea spoons)
Sugar or jaggery	: 40 grams (2½ tablespoons)
Spinach (or any other leafy vegetable)	: 30 grams (1½ bundle)

METHOD:

Roast groundnut, wheat and Bengalgram and powder them. Mix the wheat, Bengalgram and groundnut powders and prepare a batter by addition of jaggery dissolved in a suitable amount of water and made into a thin syrup.

Boil spinach in water till soft. Mash and strain through a clean cloth.

Add the vegetable juice to the batter and cook for a few minutes with continuous stirring till semi-solid.

COMMERCIAL RECIPES

GROUNDNUT BISCUITS

INGREDIENTS:

Groundnut (roasted)	: 25 grams (1½ tablespoons)
Wheat flour(roasted)	: 25 grams (1½ tablespoons)
Sugar	: 20 grams (4 tea spoons)
Baking powder	: a pinch
Salt	: to taste

METHOD

Powder the main ingredients and mix them. Add baking powder and salt and mix thoroughly. Make a stiff dough by kneading the mixture. Roll like chapatis.

Cut out any shape desired with tin-lids or any sharp instruments. Place the biscuits on metal trays and bake them well on heated sand in a dekchi. (The dekchi should be kept covered with a lid and pieces of live charcoal kept on the lid to ensure uniform all-round heating).

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Remove the biscuits when they are goldenbrown
this usually takes about 20 minutes.

The quantities indicated are for use as a supplement per child per day. Similar biscuits can be prepared using Bengalgram, gingelly seeds, cowgram and horsegram.

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THE DANGER OF UNDER FEEDING

Kwashiorkor and marasmus are two diseases caused by insufficient intake of food. This leads to deficiency of calories (energy) and protein (body building material).

VICTIMS

Kwashiorkor and marasmus occur most commonly in children between 1-5 years of age. Breast milk is sufficient for children only upto the age of 4 months. Supplementation with cereals, pulses, milk and eggs after the age of 4 months is essential. If this is delayed or not done, children do not grow properly and kwashiorkor and marasmus develop.

SIGNS AND SYMPTOMS:

OEDEMA: Children with kwashiorkor first show swelling of the legs. Later, the face and the whole body may also become swollen.

SKIN CHANGES:

The skin becomes rough and sore.

HAIR CHANGES:

The hair may become scanty and also change colour from black to various shades of brown. The child also becomes irritable and disinterested in his surroundings.

Children with marasmus become very thin and feeble due to wasting of muscles. However, there is no oedema.

TREATMENT:

The child should be made to eat more food at frequent intervals. Severe cases with loss of appetite should be treated at the hospital. Milder cases can be treated at home.

The diet must contain protein and energy rich foods. A combination of cereals, millets, pulses and oilseeds will provide the necessary nutrients. If possible, milk, eggs or flesh foods should also be given.

It is important to treat infections and diarrhoea promptly.

The National Institute of Nutrition, Hyderabad has formulated an energy-protein rich mixture to treat protein calorie malnutrition at the home level. It consists of wheat, roasted Bengal gram dhal, groundnuts and jaggery. These ingredients can be suitably changed depending upon local availability. The composition of the mixture is given below:

Whole wheat (roasted)	:	40 grams
Bengal gram (roasted)	:	16 grams
Groundnut (roasted)	:	10 grams
Jaggery	:	20 grams
TOTAL		<hr/> 86 <hr/>
Calories	:	330
Protein	:	11.3 grams.

Many children with protein calorie malnutrition have been treated with this food mixture. A picture of one of these children is shown below. The child showed improvement after a few weeks and was completely cured within 3 months.

INFANT FEEDINGS

Breast milk is a nutritious food and meets the baby's requirements fully till the 4th month of life. Later, breast milk alone is not enough to meet the nutritional needs of the growing child. This calls for additional food supplements. If additional foods are not given, the baby does not grow properly and can show stunted growth.

WEANING

The gradual switching over of the child from breast milk alone to other foods is called 'weaning'.

Most rural Indian mother do not give supplementary foods because of the fear that infants will not be able to digest solid or even semi-solid foods. This is unfortunately a wrong belief. The right type of foods cooked in the right way and introduced gradually are easily digested and will greatly benefit the child.

The first foods added to the child's diet after 4 months can be in the liquid form. Buffalo's or cow's milk, mashed vegetables like potatoes, tender beans, carrots and green leafy vegetables can be safely given. Many mother add too much water to milk thus making it less nutritious. This practice should be discouraged.

Introducing new foods to infants is not always very easy as some infants may not accept them readily, but the mother should continue to coax the child till he accepts it.

At the age of 5-6 months cereals and millets can be introduced in the form of porridges. Small amounts of pulses should be added to the preparation to make it more nutritious. The belief that pulses are gas producing and cause distension on the stomach should not exclude the use of pulses in infant feeding. Infants tolerates a fairly good amount of pulses. Green leafy vegetables should also be added, since they provide many nutrients like vitamins A and C, Iron and Calcium.

These nutrients are essential for good vision, blood formation and healthy bones. A preparation using cereal, pulses and greens is given below:

KICHEDI

Rice	- 3½ table spoons (50 Grams)
Greengram dhal (roasted)	- 2 table spoons (25 grams)
Leafy vegetables (Palak or Amaranth)	- 1 bundle (15 grams)
Salt	- As required

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METHOD

Rice and dhal are cleaned, washed and cooked together. Palak is cooked and strained through a clean cloth. The vegetable juice is added to the cooked rice-dhal mixture. Salt is added and mixed.

Soft ripe fruits should be mashed and given to the baby. A ripe bababa is relished by all babies. Orange and sweet lime juices are good sources of vitamin C. These, however, are more expensive than are green leafy vegetables.

It should be remembered that clean vessels and boiled and cooked water should be used while preparing any food supplement. Hands should be cleaned well before preparing the food.

Eggs and flesh foods can be fed to the infant around the first year of life whenever they are available and can be afforded by the parents. Initially the egg should be given in a soft boiled form.

If the mother is busy with other work and cannot prepare fresh supplements every day, she can prepare ready mixed by roasting cereals and millets (like wheat, ragi and bajra) and pulses (like Bengalgram and greengram) and powdering them separately. These powders can be mixed and stored in clean tins for a few months. Small amounts of these powders can be prepared as porridges and fed to babies.

An example is given below:

R A G I N A

Ragi - 4 tablespoons (60 gms)

Bengalgram dhal(roasted)- 4 teaspoons (20 gms)

Sugar - 3½ tablespoons(50 gms)

METHOD

Powder all the ingredients and cook in sufficient water. Addition of milk makes the porridge more nutritious.

The amounts indicated for each recipe are meant to be given per day per child. They should be distributed in the child's diet in equal amounts during the whole day. Instead of ragi or bajra, wheat can be used. Similarly, any type of pulse can be used instead of Bengalgram dhal.

Such supplements started at the proper time will go a long way in keeping the infant healthy and assuring proper growth.
