

# Development of products for promotion of breastfeeding and complimentary feeding

Sunidhi Mishra and Sarla Lakhawat

Breastfeeding and complimentary feeding is the way to provide the nutrient to the infant for the growth and development. The objective of the study was to develop the products and calculate the nutritive value of the product for the breastfeeding and complimentary feeding. In this study the ingredients for the development of products were collected from the local market of Udaipur city. Acceptability of the products will be assessed on 9-point Hedonic scale with the help of selected panel of judges. Two products were developed; one for the breastfeeding and one were for the complimentary feeding. The selected panel of judges accepted the products. The products were rich in nutrients such as energy, protein, fat,  $\beta$ -carotene, iron and calcium. This work has provided information about products for promotion the breastfeeding and complimentary feeding and also the nutrients content of the products. The nutrients rich products such as protein,  $\beta$ -carotene, iron and calcium are essential for the promotion of breastfeeding and complimentary feeding.

**Key Words :** Breastfeeding, Complimentary feeding, Nutrient

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## INTRODUCTION

The world health organization (WHO) recommends exclusive breastfeeding during the first six months of life. From six months onwards, continued breastfeeding combined with complementary foods of good quality in sufficient quantities for 2 years or longer is recommended. Exclusive breastfeeding means that the child only receives breast milk, and if necessary the addition

of vitamins, minerals and medicine. The WHO recommendation applies to all countries and populations regardless of economic status or developmental level (WHO, 2002).

Breastfeeding has many health benefits for both baby and mother. Breast milk is not only a food source but contains immune-related components and various biologically active substances that contribute to efficient nutrient utilization and gives the child active and passive protection against infections (Hanson, 2004).

When breast milk is no longer enough to meet the nutritional needs of the infant, complementary foods should be added to the diet of the child. The transition from exclusive breastfeeding to family foods, referred to as complementary feeding, typically covers the period from 6 to 18-24 months of age and is a very vulnerable period. It is the time when malnutrition starts in many infants, contributing significantly to the high prevalence

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of malnutrition in children under five years of age world-wide. WHO estimates that 2 out of 5 children are stunted in low-income countries. Complementary feeding should be timely, meaning that all infants should start receiving foods in addition to breast milk from 6 months onwards. It should be adequate, meaning that the complementary foods should be given in amounts, frequency, consistency and using a variety of foods to cover the nutritional needs of the growing child while maintaining breastfeeding (<https://www.who.int>).

Foods should be prepared and given in a safe manner, meaning that measures are taken to minimize the risk of contamination with pathogens. And they should be given in a way that is appropriate, meaning that foods are of appropriate texture for the age of the child and applying responsive feeding following the principles of psychosocial care. The adequacy of complementary feeding (adequacy in short for timely, adequate, safe and appropriate) not only depends on the availability of a variety of foods in the household, but also on the feeding practices of caregivers. Feeding young infants requires active care and stimulation, where the caregiver is responsive to the child clues for hunger and also encourages the child to eat. This is also referred to as active or responsive feeding (<https://www.who.int>).

WHO recommends that infants start receiving complementary foods at 6 months of age in addition to breast milk, initially 2-3 times a day between 6-8 months, increasing to 3-4 times daily between 9-11 months and 12-24 months with additional nutritious snacks offered 1-2 times per day, as desired (<https://www.who.int>).

## METHODOLOGY

### Locale of the study:

The present study entitled development of products for promotion of breastfeeding and complimentary feeding is carried out. The study will be conducted in the Department of Food Science and Nutrition, College of Home Science, Maharana Pratap University of Agriculture and Technology, Udaipur.

### Collection of sample:

Ingredients will be procured from the local market of Udaipur city.

### Selection of recipes:

*Paratha* (carrot, onion, garlic) for breastfeeding and

Smoothie for complementary feeding will be developed.

### Recipe for breastfeeding promotion:

Carrots serve as an excellent source of vitamin A and other nutrients necessary for your baby's growth. Both carrots and beetroot contain a good amount of  $\beta$ -carotene, which is said to increase the supply of breast milk. Also,  $\beta$ -carotene is beneficial for the overall growth of newborn babies. Plus, these vegetables are high in minerals and nutrients that a nursing mother needs. Ginger is believed to help a mother heal from childbirth. It's also thought to be galactagogue, which stimulates milk production.

### *Paratha* - (carrot, onion, garlic):

Table A : Ingredient required	
Ingredient	Amount
Wheat flour	70 g
Beetroot	20 g
Carrot	20 g
Ginger	5 g
Oil	10 ml
Salt	According to taste

### Procedure:

#### *Recipe for complementary feeding:*

Complementary feeding is defined as the process starting when breast milk alone is no longer sufficient to meet the nutritional requirements of infants, and therefore other foods and liquids are needed, along with breast milk.

### Smoothie:

Table B: Ingredient required	
Ingredient	Amount
Papaya	40 g
Potato	50 g
Milk	100 ml
Sugar	10 g

### Procedure:

- Firstly boil the potato
- Peel the papaya and cut in to small pieces
- Mixed the papaya and potato well and cook with milk.
- After proper cooking mix the sugar in it and grind in the mixer properly.

– Let it cool and feed the child.

### Sensory evaluation of developed products:

The acceptability of gravies were evaluated by a panel of 10 judges using 9-point Hedonic Scale (Ranganna, 1986) to test the liking or disliking of products. Semi-trained panel did the evaluation. The panelist asked to record the level of liking or disliking by giving marks for various characteristics of the products. The samples were rated on 9-point Hedonic scale for quality attributes according to following grade descriptions and scoring.

### Calculation of nutritive value of recipe:

The nutritive value of the most acceptable premix was calculated by using food composition table given by ICMR (2010).

### OBSERVATIONS AND ASSESSMENT

It was found that both the recipe was accepted by the panel member on 9 point hedonic scale. *Paratha* contains good amount of nutrients such as energy (370.7kcal), protein (8.32 g), fat (6.18 g),  $\beta$ -carotene

**Table 1: Nutritive value of the Paratha**

Ingredient	Amount	Energy (kcal)	Protein (g)	Fat (g)	$\beta$ -carotene (mg)	Iron (mg)	Calcium (mg)
Wheat flour	70 g	238	7.39	1.07	1.86	2.87	21.65
Beetroot	20 g	29.8	0.39	0.02	2.02	0.15	3.45
Carrot	20 g	32	0.2	0.09	541.2	0.14	8.21
Garlic	5 g	25.9	0.34	-	-	0.05	1.00
Refined oil	5 ml	45	-	5	-	-	--
Salt	Acco to need	-	-	-	-	-	-
<b>Total</b>		<b>370.7</b>	<b>8.32</b>	<b>6.18</b>	<b>545.08</b>	<b>3.21</b>	<b>34.31</b>

**Table 2: Nutritive value of recipe – per 100 g**

Ingredient	Amount (g)	Energy (kcal)	Protein (g)	Fat (g)	$\beta$ -carotene (mg)	Iron (mg)	Calcium (mg)
Wheat flour	100	340	10.57	1.53	2.67	4.10	30.94
Beetroot	100	149	1.95	0.14	10.14	0.76	17.28
Carrot	100	160	1.04	0.47	2706	0.71	41.06
Garlic	100	518	6.92	0.16	-	1.05	20.08
Oil	-	-	-	-	-	-	-
Salt	-	-	-	-	-	-	-
<b>Total</b>		<b>1167</b>	<b>20.48</b>	<b>2.3</b>	<b>2718.81</b>	<b>6.62</b>	<b>109.36</b>

**Table 3: Nutritive value of smoothie**

Ingredient	Amount	Energy (kcal)	Protein (g)	Fat (g)
Papaya	40	40	0.16	1.13
Potato	50	146	0.77	0.11
Milk	100	305	3.26	6.58
Sugar	10	24.2	-	-
<b>Total</b>		<b>515.2</b>	<b>4.19</b>	<b>7.82</b>

**Table 4: Nutritive value of per 100 g**

Ingredient	Amount	Energy (Kcal)	Protein (g)	Fat (g)
Papaya	100	100	0.42	2.83
Potato	100	292	1.54	0.23
Milk	100	305	3.26	6.58
Sugar	-	-	-	-
<b>Total</b>		<b>697</b>	<b>5.22</b>	<b>9.64</b>

(545.08), iron (3.21) and calcium (34.31). These nutrients are promote the breastfeeding, which is full of nutrients, and provide a complete milk to the infant.

The total nutrient found in smoothie is energy (512.2 kcal), protein (4.19) and fat (7.82). Nutrients play important role in the growth and development of the children so this recipe is good for the children's health.

### Conclusion:

During the first six months after delivery, the baby is fed only on breast milk, and the baby depends on the mother for all nutrient requirements. Eating a healthy diet while breastfeeding is important because what women eat determines the energy, protein, nutrient and vitamin content of your breast milk. Additionally, some minerals and vitamins are required for body processes such as healing wounds quickly. Nutritional demands during lactation are high and can have a negative impact on mother and child if they are not met. After six month of the breastfeeding complimentary food should be started to meet the nutritional requirement of the child. A high nutritious diet is important for the both mother and child.

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