World Journal of Advanced Research and Reviews
eISSN: 2581-9615 CODEN (USA): WJARAI
Cross Ref DOI: 10.30574/wjarr
Journal homepage: https://wjarr.com/

(RESEARCH ARTICLE)

Check for updates

Development of probiotics and prebiotics product as weaning food for infants

Shreya Singh * and Neetu Singh

School for Home, Science F.S.T B.B.A. U, Lucknow, Uttar Pradesh, India.

World Journal of Advanced Research and Reviews, 2023, 17(01), 073–076

Publication history: Received on 05 November 2022; revised on 26 December 2022; accepted on 29 December 2022

Article DOI: https://doi.org/10.30574/wjarr.2023.17.1.1376

Abstract

The present investigation entitled "Development of probiotics & prebiotics product as weaning food for infants" was based upon Probiotics and prebiotics which is beneficial for bacteria grow back and good digestion capability. Prebiotics function is to increase our gut healthy bacteria groups such as bifid bacterium and lactobacillus. Food containing probiotics (bacteria) and prebiotics (fermented fibre) are called symbiotic food because a component stimulates the activity of the other, being twice effective. In this research work mainly three weaning foods were developed with different compositional values of milk and starch weaning food i.e., M ilk (120 ml), starch (30 ml), M ilk and bread weaning food, M ilk (120 ml), bread (3 slice), M ilk, fruits pulp weaning food, milk (120 ml), fruits pulp (56 g). Highly accepted weaning food is milk and starch weaning food among the three products.

Keywords: Weaning food; Digestion; Stimulates; Probiotics; Capability

1. Introduction

Probiotics and prebiotics can help the beneficial bacteria grow back. A person needs a balance of intestinal bacteria favourable to digestion in order for your body, especially the intestines, to utilize minerals and other nutrients from your food. This bacterium works off carbohydrates and sugars, often called fructooligosaccharides, found in vegetables and fruits, a large part of a balance diet. A balance diet is essential for health to provide the nutrients needed for energy and vitality and it consists of protein, carbohydrates, fibre, vitamins and minerals, and fats. It may come as a surprise, but not all bacteria are bad for us. It's common to hear new report about harmful bacteria (pathogens) these days, & most of us are familiar with some of their names-*Listeria monocytes*, *clostridium botulinum* and various strains of salmonella, for instance. But other families of bacteria are not injurious to health and may in fact; provide some health benefits, particularly those in the *lactobacillus and Bifidobacterium genera*. Probiotics are "live microorganism which when administered in adequate amounts confer a beneficial health effect on the host." These micro -organisms do not promote or cause disease.

Gastrointestinal flora influence health, but the composition of flora can be adapted by consuming prebiotics or probiotics. Prebiotics are no digestible substances that stimulate the growth of health-promoting bacteria in the colon, such as bifid bacteria. They are live microbial feed supplements which improve the intestinal microbial balance. Immediately after birth, bacterial colonization of the infant's gut begins with bifid bacteria and lactobacilli. These organisms are transferred from the maternal microbial flora in the genital tract and colon during delivery, and also from the environment. Gut -associated immune tissue comprises 80% of the immune system, making the composition of intestinal flora an important factor in the immune system. It is believed that the onset of many diseases possibly relates to disruption of the early colonization of the gut. many Preterm infants have delayed colonization of the gut with beneficial flora by three to four weeks, but colonization with pathogens occurs earlier and contributes to health problems, such as necrotizing enter colitis (NEC).

* Corresponding author: Shreya Singh

2. Material and methods

The present investigation entitled "Development of probiotics & prebiotics product as weaning food for infants" was carried out to outlay the effect of probiotics as well as prebiotics among infants under the following heads:

- Prebiotic and probiotic property of the sample
- Weaning food and its standardization

2.1. Selection of ingredient for weaning food

Weaning food is a food for infant (6 months to 2 year), it is a source of food other than mother's breast milk. Weaning is the introduction of solid food in a baby's diet during the first year after birth. Starchy foods (rice, bread, fruits) are rich in prebiotic to enhance or activate the growth of probiotics are mixed in milk, curd is used as a probiotic for the fermentation. Probiotic are the microorganism that are present in curd and live in gut of humans and help in the digestion.

2.2. Nutritional property of taken sample

This step involved nutritional analysis of the milk involving g different parameters like-

Determination of fat percentage, estimation of protein percentage, amount of carbohydrate and level of vitamin C percentage.

- Tools: For the characterization of nutritional profile of milk, curd, rice, fruits and bread DIET. CAL. Software is used.
- Product development: This phase involved the all method of production of weaning food by using different ingredients in milk like-milk with bread, milk with starch and milk with fruits pulp.

3. Results and discussion

3.1. Prebiotic and Probiotic Property of the Sample

Prebiotics Function is to increase our gut healthy bacteria groups such as bifidobacterium and lactobacillus. Food containing probiotics (bacteria) and prebiotics (fermented fiber) are called symbiotic food because a component stimulates the activity of the other, being twice effective. This fermentation process feeds beneficial bacteria colonies (including probiotic bacteria) and helps to increase the number of desirable bacteria in our digestive systems that are associated with better health and reduce disease risk.

The colonic micro flora is important to health. The growth and metabolism of the many individual bacterial species inhabiting the large bowel depend primarily on the substrates available to them, most of which come from the diet [1]. This has led to attempts to modify the structure and metabolic activities of the community through diet-using probiotics and prebiotics. Probiotics are live microbial food supplements. The best known are the lactic acid bacteria and bifida-bacteria, which are widely used in yoghurts and other dairy products. These organisms are non-pathogenic and non-toxic, retain viability during storage, and survive passage through the stomach and small bowel. Prebiotics are non - digestible food ingredients which selectively stimulate the growth or activities, or both, of lactobacilli or bifid bacteria in the colon, thereby improving health.

3.2. Nutritional value of milk

The table given below is the interpretation of nutritional analysis of milk value give in 100g.

Table 1 Product and Carbohydrate energy calcium

Product name	Protein (g)	Fat (g)	Carbohydrate (g)	Energy (k. Call)	Calcium (mg)
M ilk buffalo's (100 ml)	4.3	6.5	5.0	117	210
M ilk buffalo's (120 ml)	5.2	7.8	6	140	252
M ilk cow's	3.2	4.1	4.4	67	120

3.3. Nutritional characteristics of rice value give in 100 g

The table given below is the interpretation of nutritional analysis of rice.

Table 2 Protein energy fat Carbohydrate calcium

Product (g)	Protein (k. call)	Energy (g)	Fat (g)	Carbohydrate(mg)	Calcium (mg)
Raw rice (100g)	6.8	370	0.5	81.7	11.0
Raw rice (30g)	1.3	103.5	0.2	23.46	2.6
Rice milled	6.8	345	0.5	83	10

3.4. Develop weaning food

Preparation of weaning food with milk and starch Quantity used for the milk and starch weaning food were-Required amount of milk=120 ml required amount of rice starch=30 ml required amount of curd =1/2 tbsp. It enhances the digestibility of infant because it provides prebiotics and probiotics.

3.5. Prepared weaning food with milk and fruits pulp

Quantity used for the milk and fruits pulp weaning food were-Required amount of milk = 120 ml required amount of fruits pulp (banana & muskmelon) = 56g required amount of curd for fermentation=1/2 tbsp.

3.6. Prepared weaning food with milk and bread

Quantity used for the milk and bread weaning food were required amount of milk=120 ml, required amount of bread =3 slice and required amount of curd for fermentation =1/2 tbsp.

3.7. Summary

Prebiotics function is to increase our gut healthy bacteria groups such as Bifidobacterium and lactobacillus. Food containing probiotics (bacteria) and prebiotics (fermented fibre) are called symbiotic food because a component stimulates the activity of the other, being twice effective. This fermentation process feeds beneficial bacteria colonies (including probiotic bacteria) and helps to increase the number of desirable bacteria in our digestive systems that are associated with better health, reduce disease and better digestive system.

In the preparation of milk + starch weaning food, the quantity of milk taken was (120 ml) and the starch quantity (30 ml) In the preparation of milk + bread weaning food, the quantity of milk taken was (120 ml) and the bread quantity (3 slices). Preparation of milk + fruits pulp weaning food, the quantity of milk taken was (120 ml) and the fruit pulp quantity (56g).

4. Conclusion

In this research work mainly three weaning foods were developed with different compositional values of milk and starch weaning food i.e., Milk (120 ml), starch (30 ml), Milk and bread weaning food, Milk (120 ml), bread (3 slice), Milk, fruits pulp weaning food, milk (120 ml), fruits pulp (56 g). Highly accepted weaning food is milk and starch weaning food among the three products. Weaning is mainly recommended to infant (6 months to 2 year) their protein, carbohydrate, fat and vitamin C. Effective in gums and different digestive related problems.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest.

References

[1] Aalander M, Matto J, Kneifel W, Johansson M, Kogler B, Crittenden R. Effect of galacto-oligosaccharide supplementation on human fecal microflora and on survival and persistence of Bifidobacterium Lactis Bb-12 in the gastrointestinal tract. International Dairy Journal. 2001; 11:817-825.

[2] Adam A, Levrat-Verny MA, Lopez HW, Leuillet M, Demigne C, Remesy C. Whole wheat and triticale flours with differing viscosities stimulate cercal fermentations and lower plasma and hepatic lipid in rats. Journal of Nutrition. 2001; 131:1770-1776.

[3] Anderson DM. From Pediatric Nutrition. Handbook of Pediatric Nutrition. Edited by: Samour PQ, Helm KK. James and Bartlett Publishers, Sudbury, Massachusetts, 2005, 53-71.

[4] Gibson GR, Beatty EH, Wang X, Cummings JH. Selective stimulation of bifidobacteria in the human colon by oligofructose and inulin. Gastroenterology. 1995; 106:975-82.

[5] Nutritional advantages of probiotics and prebiotics. Marteau P, Boutron-Ruault MC. British Journal of Nutrition. 2002; 87(2):5153-5157.

[6] Probiotics and prebiotics: can regulating the activities of intestinal bacteria benefit health George T Macfarlane, John H Cummings Probiotics, prebiotics and synbiotics - a review, Kavita R Pandey, Suresh R Naik, Babu V Vakil.

[7] Robles Alonso V, Guarner F. Linking the gut microbiota to human health. British Journal of Nutrition. 2013; 109: S21-S26.

[8] Sanders ME et al. An update on the use and investigation of probiotics in health and disease. Gut. 2013; 62(5):787-796.

[9] Wu GD, Lewis JD. Analysis of the human gut microbiome and association with disease. Clinical Gastroenterology Hepatology. 2013; 11(7):774-777.