

Incorporation of Organic Commodities to Develop Nutraceutical Product Aiding Infant Metabolism

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ABSTRACT

World is modifying in terms of utilization of Nutraceuticals and its immune soothing effects. Increasing demands of infant based nutraceuticals products holds a significant place in Food and health departments. Tapioca Pearl commonly known as Sagu extracted out from spongy center of stem and is proven to have good nutraceutical impactful properties on health by providing aid to metabolism of infants and adults. Tapioca works on the digestive system of infants to sooth their intestinal health. Tapioca based infant formula provides proper nutrition that will boost complex energy in particular time frame. Therefore, a ready to eat infant formula product will be made that can act as a whole meal for infants. This infant formula will also be formulated with carrots puree to enhance allergy resistance by providing phytochemicals like carotenoids, vitamins and minerals to the infant body. Carrots are the rich source of antioxidants i.e. β -carotene which gets converted into vitamin A in the body. Also being a rich source of fibers they provide prevention to babies for constipation. They also have vitamin K that helps in blood clotting. While Sago contains an essential amount of Iron, protein, calcium, vitamins, and other minerals like potassium, iron etc. Such ready to eat product provide prevention to infants from digestive discomforts including constipation, indigestion, bloating and flatulence. Helps infants to gain weight, improve their joint and bone health also provide neurological growth and development. A nutri based product rich in sago, carrots can be a potential food for babies and helps economical demands of Pakistan. Freeze drying will be done for preserved powder milk based formula and is stored in stainless steel jar and has a shelf life for up to 6 months without the use of preservatives. Product like this holds a significant market and easy usage will provide a huge consumer interest.

Keywords: Sago, Neurological, carotenoids, Spray Dryer, Freeze drying, Infant Milk formula.

INTRODUCTION

Nutraceutical Products are the product that holds huge impacts on human sciences and can have great disease targeting mechanism and heal body's mechanism by fighting reactive species. Sago (English) or Sagu (Indonesia and malaysia) is extracted from sago palm Metroxylan (Metaragakusuma, 2015). Sagu is processed / pre gelatinized edible starch product marketed in the form of small globules or pearls. on an average tapioca tubers yield 200 kg of sago and required 5000 liters of water ($5m^3$). Commodity is rich in starch, protein, fat, fibers, ash, calcium and iron. Carotenoids are named after carrot, because carrot accumulates an enormous number of carotenoids in its roots. Orange and purple carrots have higher concentrations of carotenoids in the phloem than in the xylem. Beta-carotene makes

up 80% of total carotenoids contained in domestic carrot roots. Generally, a carrot contains 16 to 38 mg/100 g carotenoids. Carrots are commodity that is rich in carotenoids and has B carotene that is converted to vitamin A in the body. Vitamin A is essential for normal organogenesis, immune functions, tissue differentiation, and eyesight. The content of b-carotene in vegetable products for babies from 5 months was 57% of the total amount of carotenoids (Majchrzak, 1999). Carrots are also a rich source of vitamins and minerals that can help provide high immune index. Infant formula that is rich in carotenoids is good for baby's gut and immune system.

Pakistan needs a new formulating infant formula that can help them regulating immunity and good gut health. Development of new product in the category of infants and toddlers is the demand of time. Therefore, this product can have a potential effect on Pakistan's economy.

OBJECTIVES

- 1) To develop nutraceutical product for infants.
- 2) To sooth infant gut health.
- 3) To highlight the importance of carrots and sagu intake in minors.

To make product appealing sensorial and acceptable.

METHODS & MATERIALS

Sago powder is taken as the main ingredient in grinded and sieved form at a specific mesh size of 100. Addition of around 100 ml of water and carrots puree is taken in it for boiling the tapioca and making its blend. Addition of preservatives is also required for making it safer over a period of time and then centrifuging it at 1000-1500 rpm. Add up the milk powder which is done by spray drying milk at a constant temperature and time and allowing it to settle. Organoleptic properties are being checked at the end of product development by evaluating Aromatics, taste and texture of the formula with its obtained shelf life.

Sensory analysis is also done on the product by assessing the parameters of taste, aroma, flavor, mouth feel, consistency and aftereffects. The statistical results show good results and product acceptability.

Table 1. Nutritional value of Sagu (Tapioca pearls).

S.no	Parameters	Value
1	Moisture Content %	12.00
2	Energy (Kcal)	350.00
3	Starch (%)	98.00
4	Protein (%)	0.20
5	Fat (%)	0.05
6	Crude Fiber (%)	0.18
7	Iron (mg/100gm)	1.30
8	Calcium (mg/100mg)	10.00
9	Ash (%)	0.30
10	pH	6.0

RESULTS

Product is well maintained and assessed at a normal temperature with good shelf life and sensory properties. Infants trials are still required and product is at the stage of trials now and required qualitative and quantitative testing for further assessment. As far as product sensory and organoleptic properties are well maintained and showed a huge potential as future infant formula milk.

CONCLUSIONS

Product made from nutraceutical ingredients can have a good effect on food formulating phytochemicals in it. Research suggests a potent effect on the immunity of infants or toddlers by consuming a formula like this. Product like this containing polyphenols and flavanoids class based compounds report highest health treating properties. It aids in improving muscle and bone health, facilitates digestion and can facilitate healthy weight gain in toddlers with good neurological osteotropic activity. This formula is designed for toddlers but can be taken by the people of any age group based on its reported activities.

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