

PRELIMINARY STUDIES FOR OBTAINING PROBIOTIC DRINKS WITH MILK AND FRUIT JUICE ADDITION

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Abstract

The important role of fruit juices in nutrition is due to the high content of vitamins, sugars, pectic substances, cellulose, organic acids, aromatic substances and minerals. The fruit juices have an important role in babies and children alimentation because they insure mineral salts, vitamins and sugars to the growing organism. Also, for the elders, the fruit juices ease the digestion and prevent the aging. The probiotic drinks with milk and fruit juice addition combine the favourable effects of milk components (proteins, lipids, carbohydrates, mineral salts, vitamins) with beneficial effects of the fruit juices rich in amino acids, mineral salts, vitamins and alimentary fibres, that with the therapeutic effects of the probiotic cultures (*Lactobacillus acidophilus*, *Bifidoacterium bifidum* and *Streptococcus thermophilus*). At the fabrication of the drinks with milk and fruit juice addition were used: cow milk with the following physical-chemical characteristics: 1.5% fats, proteins, lipids, carbohydrates; apple juice from Golden apple; orange juice; graph-fruit juice; DSV culture ABT 5 and ABY 3 type it is thermophilic lactic acid culture which contains the probiotic strains *Lactobacillus acidophilus*, *Bifidobacterium* and *Streptococcus thermophilus*. Three ways of obtaining probiotic drinks with milk and fruit juices were experimented: with initial fermentation of the fruit juices and added a quantity of milk (variant A), with initial milk fermentation of milk and then added a quantity of fruit juice (variant B), that the addition of milk and fruit juices inoculated with probiotic cultures and fermented (variant C). The three types of products were afterwards submitted to the sensory analysis and then the optimal variant was chosen: the drink with milk and addition of fruit juice, subsequent fermented with probiotic.

Keywords: milk, fruit juice, probiotics, nutritional value, therapeutic value .

1. INTRODUCTION

The probiotic drinks with milk and fruit juice addition combine the favourable effects of the fruit juices rich in amino acids, mineral salts, vitamins and alimentary fibres with the therapeutic effects of the probiotic cultures (*Lactobacillus acidophilus*, *Bifidoacterium bifidum* and *Streptococcus thermophilus*) [1].

1.1. The nutritional and therapeutic value of the probiotic drinks with milk and fruit juice addition

In the current socio-economical and cultural development conditions, the quantitative insurance of alimentary products with a certain global quality is not enough anymore, but is important for these products to have an intimate quality which provides a high nutritional and a high caloric value, a pronounced innocuity character for the consumer and the capacity to

be reintegrated in the natural biological cycle of the ecosystem in which it was create [2].

The fruit juices are products which help the body to regenerate through their high content of amino acids, mineral salts, enzymes and vitamins with the condition to be fresh, raw and without preservatives [8]. The fruit juices are the single source of pectic substances, thus having a great importance in diet therapy [5]. With a moderate amount of organic acids (malic, citric and tartaric) the fruit juices have an alkalizing action over the body tumours due to the acids metabolism in alkaline salts [4]. Fruits contain specific components such as: cellulose, hemicellulose, protopectin, gums, mucilage and lignin which form a complex known under the name of alimentary fibres or ballast substances. Being rich in alimentary fibres and cellulose the fruit juices are stimulants of the intestinal transit having also a great influence over the somatic and psychical balance. The fruit juices have a high content of

mineral oligo-elements which are found under the form of soluble organic salts or under the form of inorganic salts. Out of oligoelements the potassium, calcium and magnesium are found in higher quantities. The sodium is found generally in small quantities. The mineral salts contribute to the alkalizing action of the juices.

The main effects of the fruit juices:

- nutritional and energetic effect;
- diuretic effect - favourable in the renal illnesses, decreases the cholesterol from the blood and bile, stimulates the gastric secretion, favours the iron absorption in anaemia;
- alkalizing action due to the organic acids which are metabolized in organism as alkaline salts;

- hiposodic effect due to the low sodium concentration found in juices; this is why they can be administrated abundantly in hiposodic diets;
- astringent effect due to their high content of tanning agents;
- laxative effect, characterizing especially the fruits rich in ballast [3].

Technological diagrams for obtaining probiotic drinks with milk and fruit juices addition: drinks were prepared according to three assigned technological diagrams and followed by the sensory analysis. The technological diagrams of the drinks preparation are shown in figures 1, 2, 3.

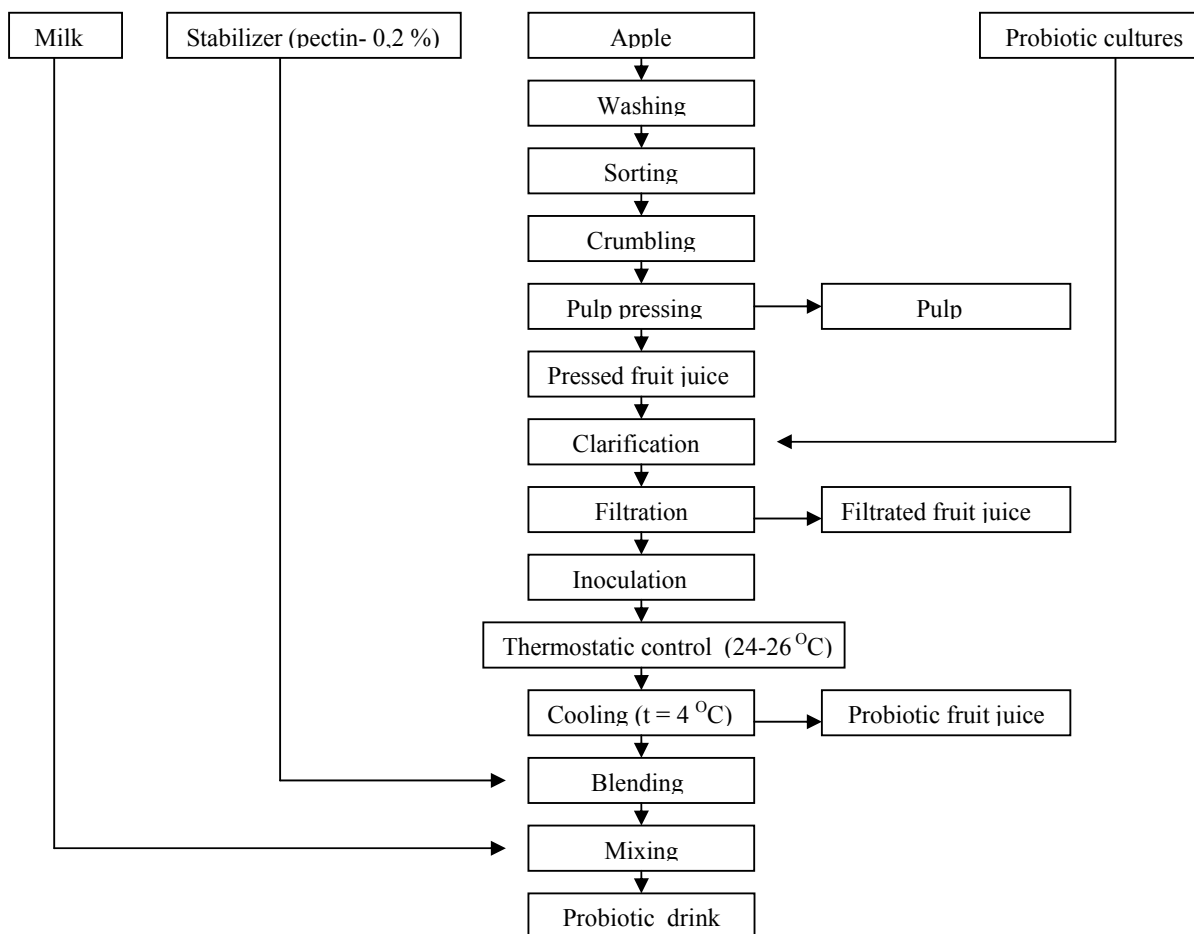


Figure 1. Technological diagram for obtaining the probiotic drinks from fermented fruit juice with milk (Variant A)

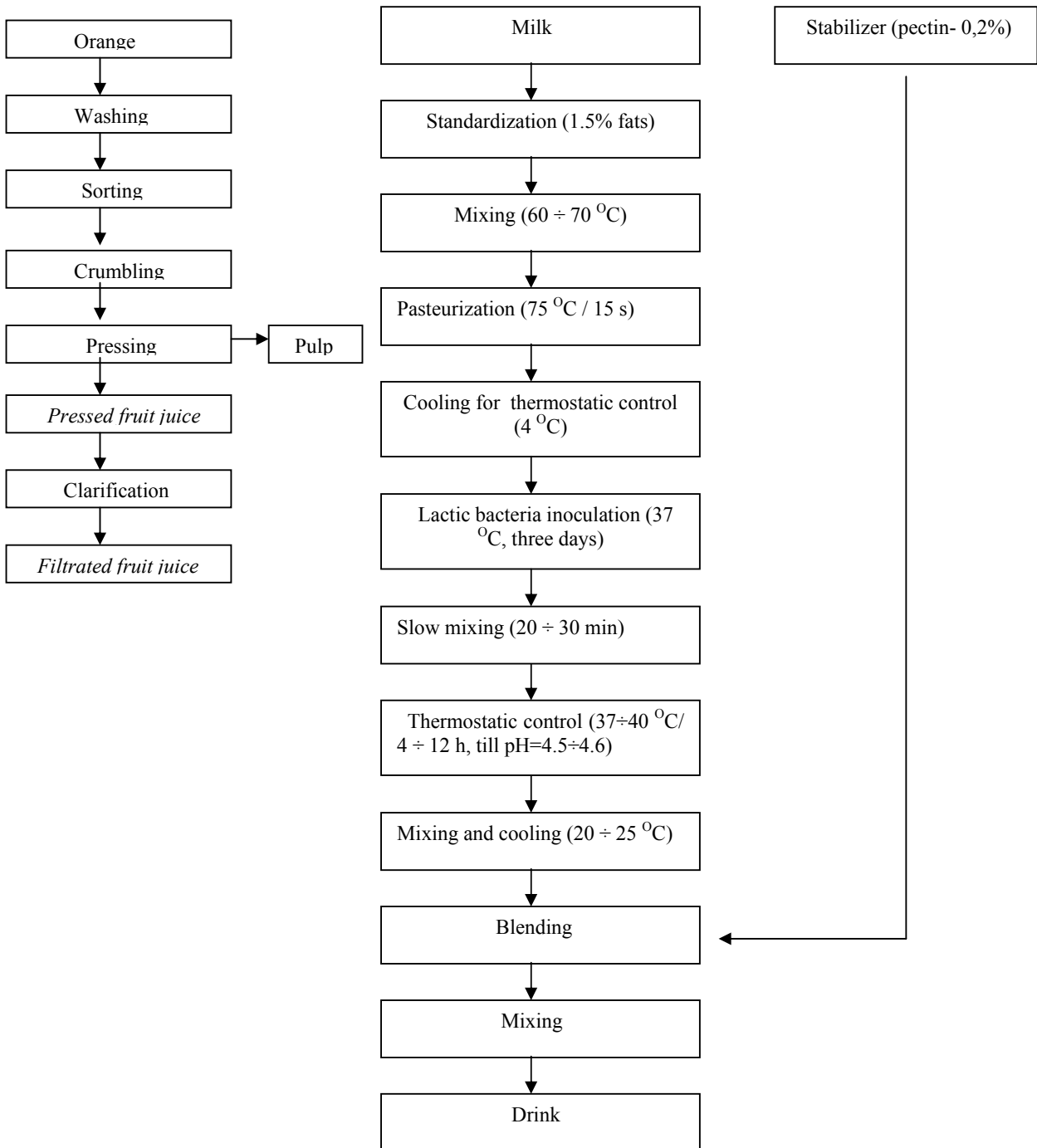


Figure 2. Technological diagram for obtaining the probiotic drinks from fermented fruit juice with milk (Variant B)

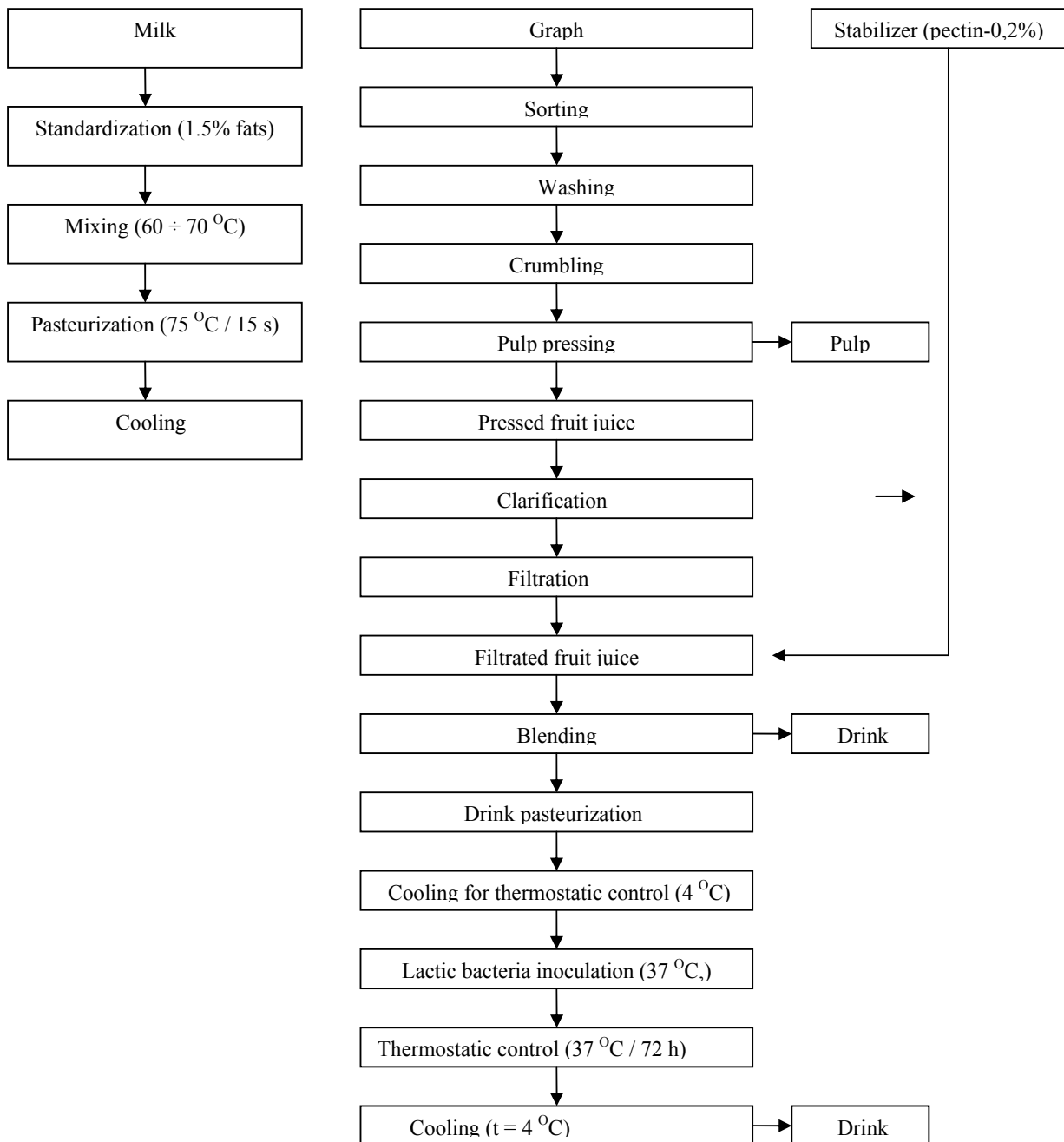


Figure 3. Technological diagram for obtaining the probiotic drinks with milk and fruit juice addition, inoculated with probiotic and fermentative strains (variant C)

2. MATERIALS AND METHODES

At the fabrication of the drinks with milk and fruit juice addition were used the following materials:

- cow milk with the following physical-chemical characteristics: 1.5% fats, proteins, lipids, carbohydrates;
- apple juice from Golden apple obtained according to the diagram in figure 1;

- orange juice obtained according to the diagram in figure 2;
- graph-fruit juice obtained according to the diagram in figure 3;
- DSV culture, ABT type it is thermophilic lactic acid culture which contains the probiotic strains: *Lactobacillus acidophilus*, *Bifidobacterium bifidum* and *Streptococcus thermophilus*.

3. RESULTS AND DISCUSSIONS

Three ways of obtaining probiotic drinks with milk and fruit juices were experimented: with initial fermentation of the juices (variant A), with initial milk fermentation (variant B) and subsequent addition of the other ingredient, and with the fermentation of the milk and fruit juice mix (variant C). The three technological diagrams for the drinks preparation are shown in figures 1, 2 and 3. The three types of products were afterwards submitted to the sensory analysis and then the optimal variant was chosen: the drink with milk and addition of fruit juice, subsequent fermented with probiotic.

4. CONCLUSIONS

I think it necessary to fabricate these functional aliments because:

- The probiotic bacteria constitute the most important group of microorganisms which confer multiple favourable effects for health such as:
 - interfere with the treatment and prevention of a broad spectrum of intestinal affections;
 - they contribute to the improvement of the immune system;
 - they deliver vitamins for the organism because these bacteria can synthesize some as: thiamine, riboflavin, pyridoxine and vitamin K;
 - they reduce the seric cholesterol level;
 - they exert a protective effect against cataract at humans;

- they have hypo-cholesterolemiant effect;
- they interfere in the cancer prevention;
- they have favourable effect in liver illnesses;
- they present favourable effect in the alimentary allergy;
- they prevent the dental cavities.

The fruit juices have an important role in babies and children alimentation because they insure mineral salts, vitamins and sugars to the growing organism. Also, for the elders, the fruit juices ease the digestion and prevent the aging

5. REFERENCES

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