

UDC 664.1.03

APPLE PROCESSING TECHNOLOGY USE OF VINEGAR FOR MEDICINAL PURPOSES

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Key words: apple, vinegar, biotechnology, production, environment, acetic acid bacteria.

Introduction

The food industry frequently uses the creation of fruit vinegars as a method of utilizing fruit by-products because surplus or inferior fruit can be used without lowering the quality of the finished product. Almost any fruit can be used to make vinegar due to the acetic nature of vinegars and the subsequent impact on the organoleptic features of the finished product.

A crucial step for the final product's quality is the preparation and manufacture of the juice for the creation of vinegar using various techniques, the most common of which are crushing or pressing.

The various conditions and methods of acetic and alcoholic fermentation processing have a big impact on the final features. Different conditions and processing methods of both alcohol and vinegar fermentation also significantly affect the final characteristics of the produced vinegar. For alcoholic fermentation, the choice between a spontaneous or inoculated procedure, as well as the microorganisms present in the process, are of particular importance. For vinegar fermentation, the type of pickling system used (surface or submerged) is one of the most influential factors for the final physicochemical properties of fruit vinegars.

A well-liked natural treatment is apple cider vinegar. For generations, people have utilized it in cooking and alternative healing. According to research, it does have some antibacterial and antioxidant effects in addition to other health benefits.

There is evidence that it might provide health advantages like:

- help with weight loss
- lower cholesterol
- reducing the blood sugar
- reducing the diabetic symptoms

Practical part

Fruit overproduction can result in environmental damage and price increases because it has a negative impact on both the environment and the economy. Alternatives that may make use of this surplus and lessen the impact on the fruit industry are therefore very valuable. Some potential

remedies include macerating fruit with vinegar, enhancing vinegar with fruit fiber, or employing fruit in the vinegar-making process.

A liquid product called vinegar that contains 4% or more acetic acid is used or ingested either straight up or as a food component [1]. It is frequently made using two-stage fermentation processes:

- (a) carbohydrate-containing substrates are fermented into alcohol, and
- (b) the resulting alcohol is then oxidized (or "acetified") to generate acetic acid.

Fruit, like apples, is a common source of raw materials for the creation of vinegar (cider vinegar). Worldwide, there are many different varieties of vinegar that range in quality, price, and type, from inexpensive distilled or synthetic vinegar and ordinary wine/cider vinegars to very pricey traditional balsamic items [1]. Its adaptability and range of uses have made it one of the most lucrative food products, with a projected global market value of US\$2.25 billion in 2020 and an expected US\$2.55 billion by 2026, considering the uncertainties caused by the COVID-19 pandemic [2].

Vinegar is created by acetic acid bacteria (AAB), which are frequently found in the raw materials needed in its production. *Acetobacter* and *Gluconacetobacter*, two of the currently acknowledged AAB taxa in the *Acetobacteraceae* family, account for the majority of the species found in vinegar [3]. Despite the vast amount of information that science has accumulated regarding the production of vinegar, the industry primarily uses submerged fermentation (SmF) techniques, where the main vessel is the acetator (acetification reactor).

Ukraine is known not only for its fertility, but also for its skill in all spheres.

According to this, there was an opportunity to do everything by yourself and also with the presence of a sufficient amount of raw materials for research.

Fermentation is a complex metabolic process when sugars are transformed into ethanol, secondary metabolites, acids, alcohols, esters, and carbon dioxide. This transformation can be affected by several parameters related to the fermentation medium. Thus, the choice of apple varieties, as well as the yeast species carrying out the fermentation process, is important.

Conclusions

1. The manufacturing of fruit vinegars is one of the most well-liked strategies for avoiding the use of current fruit surpluses and reducing the impact the fruit business has on the economy and environment.

2. The type of microorganism utilized, in both alcoholic and acetic fermentation, also affects the final features of the vinegar produced. The acetification mechanism used is another important element with relation to the physicochemical properties of the fruit vinegars that can be created.

3. Apple cider vinegar has become popular due to its many health benefits. It's made from apple that has been fermented, producing healthy probiotics and enzymes and significantly slashing sugar and calories — and those aren't the only apple cider vinegar benefits.

4. Apple cider vinegar helps improve weight loss, reduce blood pressure and cholesterol, stabilize blood sugar for people with type 2 diabetes, enhance skin health, and relieve acid reflux symptoms. Rich in protein and enzymes that help with digestion. It could also serve as a natural deodorant due to its antibacterial properties and ability to eliminate smell.

References

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