



UNIVERSITY OF LIFE SCIENCES "KING MIHAI I" FROM
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"GREEN ENERGY, TECHNOLOGIES AND INNOVATIONS"



"Young people and multidisciplinary
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TOMATOES - FOOD AS MEDICINE

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Abstract: Tomatoes (*Solanum lycopersicum* L.) are a significant vegetable crop, second only to potatoes, both in terms of cultivation and consumption. They are highly valued for their unique taste and aroma, providing valuable nutrients to the body. Tomatoes are rich in vitamins, minerals, and antioxidants, with lycopene being a particularly valuable component known for its anti-cancer and antioxidant properties. Harvesting tomatoes at a specific stage of ripeness is crucial for enabling essential biochemical processes.

The chemical composition of tomatoes is influenced by various factors, including weather conditions, growing environment, tomato type, and harvesting and storage methods. In terms of external appearance, vibrant colors and uniform skin are signs of quality, while the absence of blemishes and bruises contributes to selecting healthy and fresh tomatoes.

Tomatoes have varying water content, and dry matter represents the total non-volatile components of organic and mineral nature. Organic matter comprises main groups of chemical substances such as carbohydrates, pectic substances, acids, proteins, lipids, enzymes, vitamins, phenolic substances, pigments, antibiotics, and phytoncides.

In conclusion, tomatoes not only add exceptional taste and aroma to the diet but also serve as a valuable source of nutrients. Their consumption can bring significant health benefits, with studies indicating that 300 ml of natural tomato juice per day can cover the body's lycopene needs, also providing significant percentages of daily requirements for vitamins A and C, iron, and calcium."



Material and method

- Titrimetric determination of sample acidity
- Determination of refractometric index and Brix of samples
- Analysis of water and substance content by oven-drying method
- Determination of dry matter content in samples
- Determination of total mineral substances"

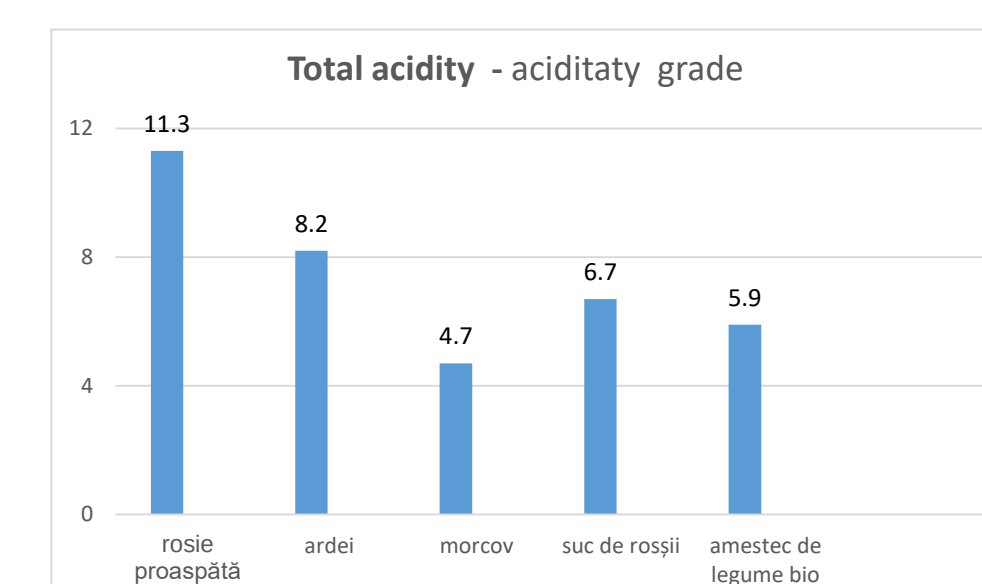
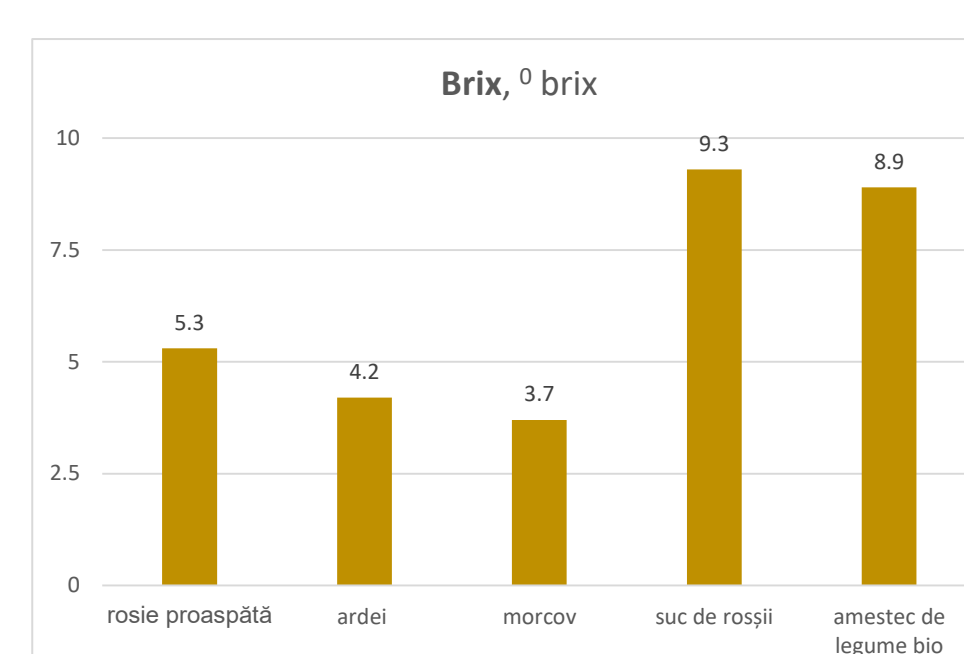
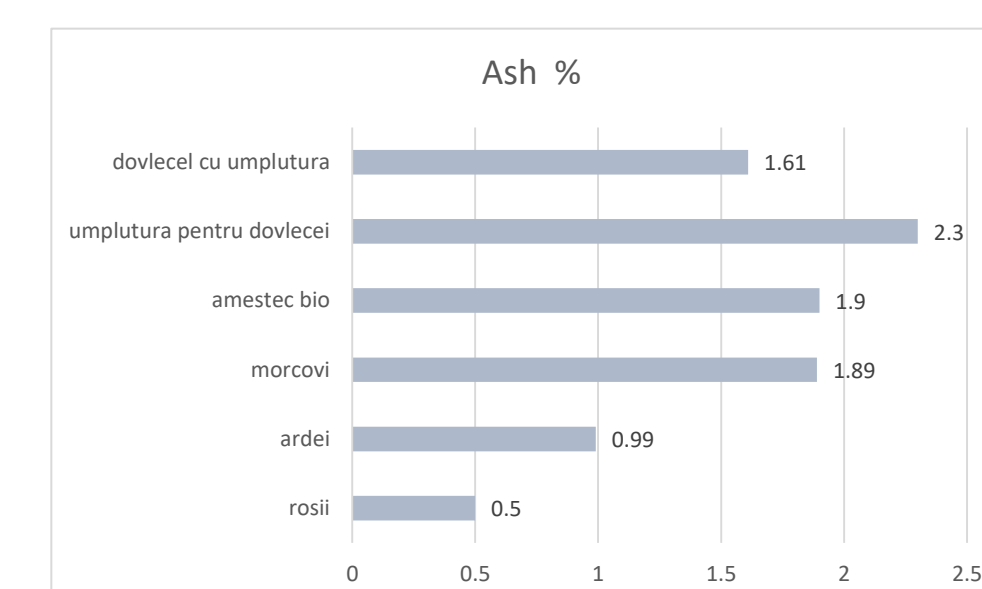
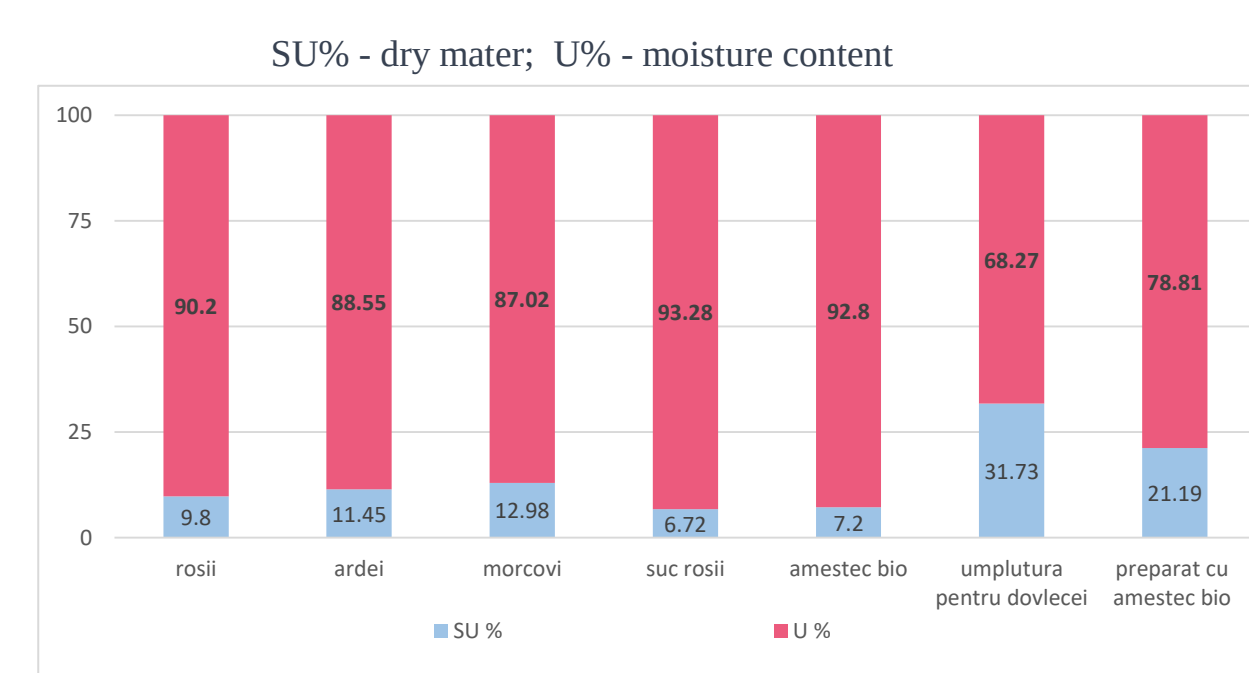


Results and discussions

Analysis of moisture and dry matter content in various samples such as tomatoes, organic vegetable mix, and culinary preparations highlighted significant differences, with tomatoes showing the highest water content, while the stuffing for pumpkins exhibited the highest dry matter content.

The results of total mineral substances determination in the analyzed samples were graphically presented, demonstrating variations among different samples.

Measurements of refractive index and Brix values, conducted using the Krüss refractometer, revealed differences among samples, with tomato juice showing the highest Brix value, while the organic vegetable mix exhibited the highest refractive index value.



Conclusions

- "The added ingredients, such as horseradish, hot peppers, carrots, and celery leaves, contain chemical compounds such as glucosinolates and capsaicin, demonstrating potent antibacterial capabilities, including cytostatic actions in various types of cancer.
- Food products based on tomatoes, combined with others, provide an essential portion of the substances necessary for the human body to maintain vital functions, significantly impacting the quality of life in a society characterized by increasing life expectancy.
- Functional foods, including tomato juice and the mixture of non-thermally treated organic vegetables, represent an important aspect of nutrition, offering a balanced combination of biologically active substances, with a beneficial effect on consumers due to their high content of antioxidants and increased nutritional value."