

**THE INFLUENCE OF SOME FACTORS ON THE ACTIVITY OF PEROXIDASE, POLYPHENOLOXIDASE AND THE CONTENT OF PHENOLIC SUBSTANCES IN PLUMS**

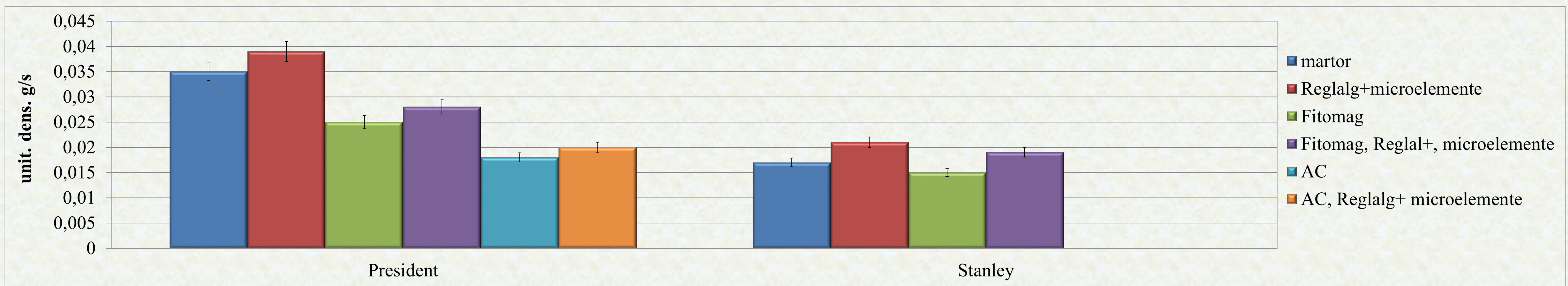
**Svetlicenco Valentina**

**Purpose:** Evaluate the activity of the enzyme peroxidase, polyphenoloxidase and the total content of phenolic substances in plum fruits according to the influence of BAS Reglalg, the microelements mentioned and the storage methods.

**Materials and Method:** Over the course of four years, the activity of the enzymes peroxidase (Ermacov A.I. et al., 1986) and polyphenoloxidase (Voscresenscaia O.L. et al., 2006) was determined in the fruits of four late varieties of plum preserved by three methods, as well as the total content of phenolic substances (Singleton V.L. et al., 1999). Four varieties of plum served as study objects:

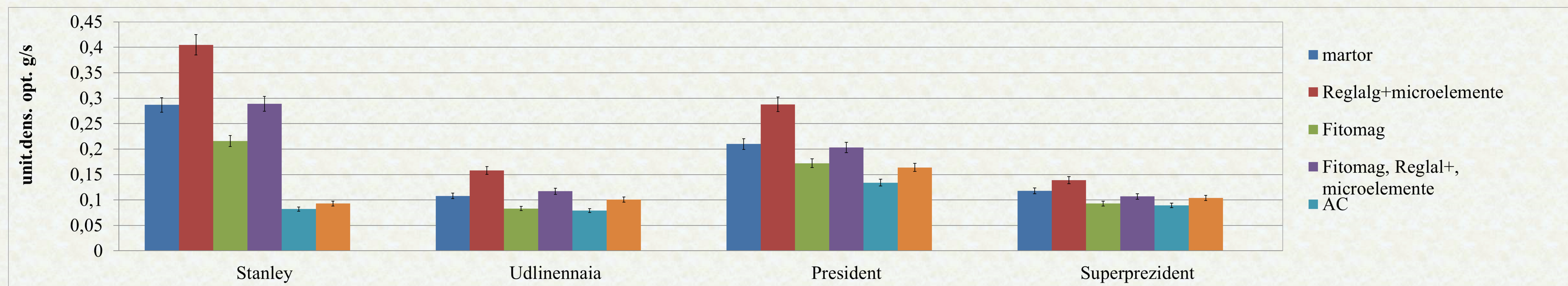


**Results:** Peroxidase activity was determined in the Stanley and Prezident varieties of foreign origin within two years. Based on the average of the results obtained over two years, the activity of this enzyme changed during storage depending on the conditions and methods applied, as well as the physiological-biochemical processes that took place during the full maturation of the fruits. In the fruits kept in the usual atmosphere (AO) these processes took place more intensively and the peroxidase activity values in both varieties are higher.



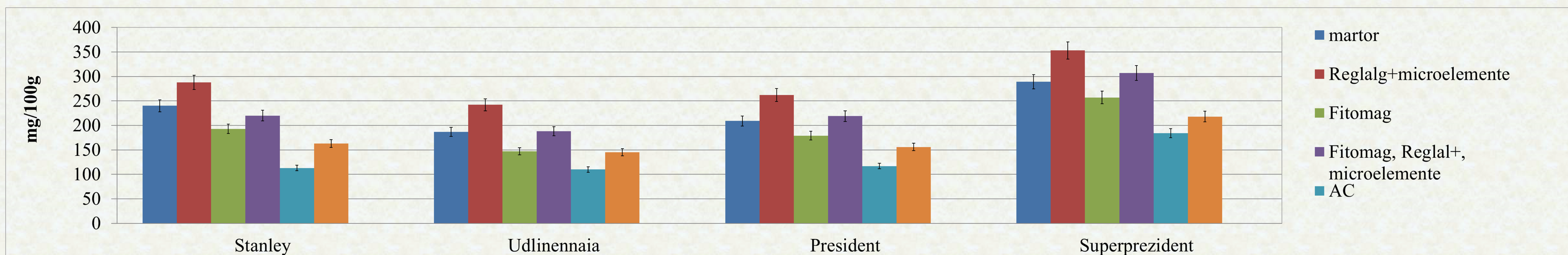
**Figure 1. Peroxidase activity in plum fruits according to the influence of BAS Reglalg, microelements and storage methods**

Analyzing the average activity of the enzyme polyphenol oxidase researched during four years in the Stanley, s. President, s. Udlinionnaia and Superprezident varieties, we obtained that in the fruits of these plum varieties the polyphenol oxidase activity was different and depended on the variety and the storage method. The activity values of this enzyme were higher in plum fruits kept in the usual atmosphere. In the fruits preserved by the other two methods, the polyphenol oxidase activity was lower.



**Figure 2. Polyphenoloxidase activity in plum fruits according to the influence of BAS Reglalg, microelements and storage methods**

The total content of phenolic substances during storage was determined in the fruits of the variety President, Stanley and two of local origin, Udlinionnaia and Superprezident. From the average of the results obtained from the research of the total content of phenolic substances during two years, we find that it was higher in the fruits preserved in AO than in those preserved by the other two methods.



**Figure 3. The total content of phenolic substances in plum fruits according to the influence of BAS Reglalg, microelements and storage methods**

**Conclusions:** During the storage of plum fruits over the course of four years, we found that the activity values of the peroxidase and polyphenoloxidase enzymes, as well as the content of phenolic substances, were higher in the fruits of the researched varieties stored in the usual atmosphere. In the fruits stored with the ethylene synthesis inhibitor Fitomag and in the controlled atmosphere, these values were lower and the fruits were stored longer, preserving their taste qualities. In the fruits treated during the vegetation period with SBA Reglalg and microelements B, Zn, Mn, Mo, the values of the investigated indices were higher than in the control variant. These substances positively influenced the activity and content of these indexes.

*Cercetările au fost realizate în cadrul proiectului Programului de Stat 20.80009.5107.18 "Formarea direcționată a calității și sistemului imunitar la fructele soiurilor tardive de prun preconizate păstrării de lungă durată", finanțat de Agenția Națională pentru Cercetare și Dezvoltare, precum și în cadrul subprogramului 011101: Abordări genetice și biotehnologice de management al agroecosistemelor în condițiile schimbărilor climatice, finanțat de Ministerul Educației și Cercetării.*