

## THE ROLE OF MICRONUTRIENTS IN WHEAT GRAIN IN HUMAN HEALTH

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**Abstract:** *The article discusses the importance of the element iron in plant and human life, the reduction in the content of vitamins, macro- and microelements during the processing of grain products, and the use of biofortification to prevent these processes.*

**Keywords:** *biofortification, selection-genetics, anemia, minerals, vitamins, enzymes*

## РОЛЬ МИКРОЭЛЕМЕНТОВ В ЗЕРНЕ ПШЕНИЦЫ ДЛЯ ЗДОРОВЬЯ ЧЕЛОВЕКА

**Аннотация:** *В статье рассматривается значение элемента железа в жизни растений и человека, снижение содержания витаминов, макро- и микроэлементов при переработке зерновых продуктов, а также применение биофортификации для предотвращения этих процессов.*

**Ключевые слова:** *биофортификация, селекция-генетика, анемия, минералы, витамины, ферменты*

## INTRODUCTION

Today, a number of works are being carried out to improve the living standards of our country's population. However, despite this, there are a number of problems in providing the population with quality food products. Among these, high-quality flour and flour products made from grains occupy a special place. Therefore, increasing grain production and meeting the population's need for quality grain products are one of the most pressing issues today.

In order to prevent this problem, artificial enrichment of flour, that is, artificial enrichment of flour with iron and zinc microelements, has been introduced in our republic [5]. However, despite this, this problem has not yet been completely resolved. This method is not very effective due to the high cost of the enrichment process, the need for complex technical equipment, and the fact that the majority of the population of our republic lives in rural areas, meaning that the population does not buy enriched flour. They grind wheat in home mills, turn it into flour, and consume it [6].

Anemia is one of the most common pathologies in the world. According to WHO experts, the prevalence of anemia among the population for health reasons was studied in 3 groups: mild (5% -19.9%), moderate (20% -39.9%) and high (40% or more). In countries

with a high prevalence of anemia, a medical approach alone is not enough to solve the problem, so decisions must be made at the state level.

**Materials and methods.** Currently, the aim is to improve these problems by breeding varieties that can accumulate more micronutrients in the endosperm of the grain. This involves biological fortification, that is, finding biotypes that contain a lot of these elements, involving them in the selection process, and cultivating high-yielding and high-quality plant varieties.

**Research samples.** The ancient local wheat varieties "Kyzyl Sharq" and "Shalola" in the Kashkadarya region, as well as the varieties "Krasnodar-99", "Yaksart", "Gozgon", and "Grom" currently grown in the region, were selected.

**Grain analysis.** The iron (Fe) content in the study samples was determined using the atomic absorption spectrophotometer method.

**Results.** The ash content of grain samples of selected plants was determined using grain ash determination methods. The extracted ash was brought to a working state in a 0.1 n HNO<sub>3</sub> solution. Then, the content of Fe and Zn elements in the solution prepared for this study was determined using the atomic absorption spectroscopy method.

Table 1

The amount of iron (Fe) in ancient local wheat and wheat varieties cultivated in the region

№	Variety name	Place of origin	Fe mg/kg			
			x	min	max	V %
1	"Kizil shark"	Dehqanabad district, Beshbulok village	81,46±11,40	58,9	95,6	24,24
2	"Shalola"	Kamashi district	78,63±5,79	67,8	87,6	12,75
3	"Yaksart"	Qarabayir village, Koson district	58,85±4,21	50,46	63,8	12,41
4	"Krasnodar-99"	Kasbi district, Misit village	48,44±1,96	45,3	52,07	7,04
5	"Gozgon"	Kamashi district, Okrabod village	79,03±8,82	64,14	94,68	19,33
6	"Grom"	Kamashi district, Okrabod village	52,79±6,46	43,2	65,09	21,19

Wheat varieties "Kizil Sharq" and "Shalola" were brought from the Dehqanabad Kamashi districts of Kashkadarya region, and their Fe content was studied. The Fe content of the "Kizil Sharq" variety was 81.46 mg/kg, with a coefficient of variation of 24.24%. The

Fe content of the “Shalola” variety was 78.63 mg/kg, with a coefficient of variation of 12.75%. The “Yaksart” variety, which is grown in the grain fields of our region, contained 58.85 mg/kg, 48.44 mg/kg, and 79.03 mg/kg, and the “Grom” variety contained 52.79 mg/kg. The highest Fe content was found in the “Gozgon” variety, which contained 79.03 mg/kg, with a coefficient of variation of 19.33%.

Conclusion. The results of the study showed that the local wheat varieties "Kizil Sharq" and "Shalola" and the "Gozgon" variety, which is widespread in our region, are high in Fe. However, ancient local varieties are rarely grown and consumed by the population. It is important to use ancient local varieties in biofortification to combat anemia and provide a safe, effective and affordable form of iron for all segments of the population.

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