

A study was made of the toxic, mitosis-modifying and mutagenic effects of food dyes: Tartrazine (E102), Green S (E142), Diamond Blue FCF (E133). The results obtained make it possible to draw the following conclusions:

The spontaneous MI level in the *Allium cepa* meristem is 20.75% and the frequency of CA is 1.03%. The length of the roots in the control was 11,75 mm. All the studied types of synthetic food dyes inhibit the growth of roots in *A. cepa*, which indicates the toxic activity of all the studied dyes.

Food dyes affect the proliferative activity of *A. cepa*, exerting both mitotoxic and mitostimulating effects.

All the studied types of synthetic food dyes cause chromosomal mutations or have mutagenic activity: they increase the frequency of chromosomal aberrations and backlogs to 7.2%, which is 7 times higher than the control level (1.03%). The level of mutagenic effect is classified as medium.

The investigated dyes possess toxic and genotoxic activity, and, consequently, products with such an additive may pose a danger to human health.

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## USE OF PLANTS IN THE SCALE AND CORROSION CONTROL

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We cannot do without water, neither we nor the industry, and therefore the question of how to deal with scum and corrosion will be relevant for a very long time. While conducting our research, we studied possible ways of using indoor and wild plants' juices to deal with the scale and corrosion, to identify the most effective and economically viable ones.

**Keywords:** hard water, scum, corrosion, anticorrosive properties, pH.

Technical progress, various chemical materials have made our water far from the ideal that is suitable for cooking and using in everyday life. Hard water is everywhere today. It forms a scum, which is deposited everywhere and affects everything on its way.

We cannot do without water, neither we nor the industry, and therefore the question of how to deal with scum and corrosion will be relevant for a very long time. Thereby, the study of possible ways of using plant juices to deal with the scale and corrosion of metal is an urgent task and has become the subject of our research.

A working hypothesis is the assumption that using the juice of certain plants can effectively fight the scum and corrosion of metal without causing harm to the environment and our health, while having economic benefits.

The purpose of the work: to study possible ways of using indoor and wild plants' juices to deal with the scale and corrosion, to identify the most effective and economically viable ones.

Objectives of the study:

1. To conduct a sociological survey to identify the relevance of this problem in the gymnasium students' families ;
2. To find out which plants can be used to deal with the scale and corrosion using literature ;
3. To check the effectiveness of the action of the juices of the selected plants in the course of the laboratory experiment;
4. To calculate the economic effect of using plant juices in comparison with traditional means;
5. To develop recommendations on the use of the results.

The research was conducted in 2017 on the basis of Gymnasium No. 1 and at the home of the authors of the work. For the laboratory experiment, the juice of plants of the biology study of Gymnasium No. 1 and the school

plot was used. The juices of 10 plants were examined. The pH of the juices was determined using the NOVA 5000 electronic chemistry biological laboratory.

In a sociological survey, in order to find out whether the students of the gymnasium are facing this problem at home (88.9% – yes), whether the scum and corrosion fighting costs the family budget a lot (55% – yes, it's expensive), whether the students are familiar with the possibility of using plants in fighting the scale and corrosion (47% are not), whether nontraditional ways of dealing with the scale and corrosion are used in the students' families (40% – yes, but not regularly, 27% – yes) and what non-chemical means of dealing with the scale are used more often in gymnasium students' families (45% – boiling with lemon acid, 34% – a metal brush), 650 people (students of the 5<sup>th</sup> – 11<sup>th</sup> gymnasium classes) took part.

The anticorrosive properties of the juices of selected plants were evaluated by examining their ability to slow the corrosion of steel and iron (wire and nails). To conduct the experiment, 50 ml of juice were poured into a beaker with a capacity of 150 ml, 50 ml of distilled water were added and steel and iron samples were placed in it (in different beakers). The time of the experiment was 7 days. Controls were flasks with distilled water, a widely advertised means of metal corrosion control- Coca-Cola and anticorrosive means AC-4722 rust converter with active crystalline hydrates, Antiruster series (50 ml of distilled water were also added to all control samples).

The antiscaling properties of the juices of selected plants were studied in the process of boiling. 100 ml of juice were poured into a kettle with scum, 400 ml of distilled water were added and boiled for 5 minutes. The control was the descaling agent "Anti-Nakipin" and lemon acid (as according to the opinion poll it is used in 45% of the families of the respondents).

We tested the possibility and efficiency of using plant juices for purification of silverware and came to a conclusion that this is not effective. The juice of any of the selected plants did not give a noticeable result.

Analysis of the pH of the juice of the plants tested showed that the highest acidity is found in Yellow dock (2.942), Geranium lemon (3.203), (3.276) Peat moss and Kalanchoe Daigremont (3.284), and the lowest pH in the Waybread juice (5.984). Having obtained such data, we assumed that plants with a higher pH would better protect metal against corrosion and cope with the scale. Regarding the protection against scale, our assumptions have been confirmed, since the Yellow dock juice and Geranium lemon juice cope with the scum in the kettle not worse than the lemon acid. Slightly less is the effect when using the Peat moss juice and Kalanchoe Daigremont juice. The application of the juice of the remaining plants did not give a positive result.

The use of plant juices to deal with the corrosion of metal products was not effective. Perhaps, the time allotted for the experiment was not enough, or the juice used should be more concentrated.

So the working hypothesis put forward by us was partially confirmed. Expecting the economic effect of using plant juices in comparison with traditional means, we relied on the prices of the store "Euroopt" and the data of the sociological survey (questions № 2 and № 5). Practically, by checking the possibility of using plant juices to control the scale and corrosion of metal objects (rubbing, soaking, boiling) and analyzing the data obtained, we made recommendations on the most effective of them.

## **ANALYSIS OF ENVIRONMENTAL ASPECTS AT THE OJSC "GOMEL PLANT OF CASTING AND NORMALS»**

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Gomel plant of casting and normals is located in the city limits and borders from the North – West with the village of Krasny Bogatyr, from the East-with the village of Nizhnyaya Brilevo and the microdistrict of Gomselmash, from the South – with the village Milcha. In accordance with the sanitary classification of enterprises, the plant belongs to the group of metallurgical, machine-building and Metalworking enterprises. to class 2 (foundry), to class 5-the rest of the production, for which the size of the sanitary protection zone is 500 m and 50 m, respectively, from the main sources of pollutants. There are no residential buildings in the sanitary protection zone.

**Keywords:** water supply, industrial waste management, gas cleaning equipment, sources of pollutant emissions, environmental activities.