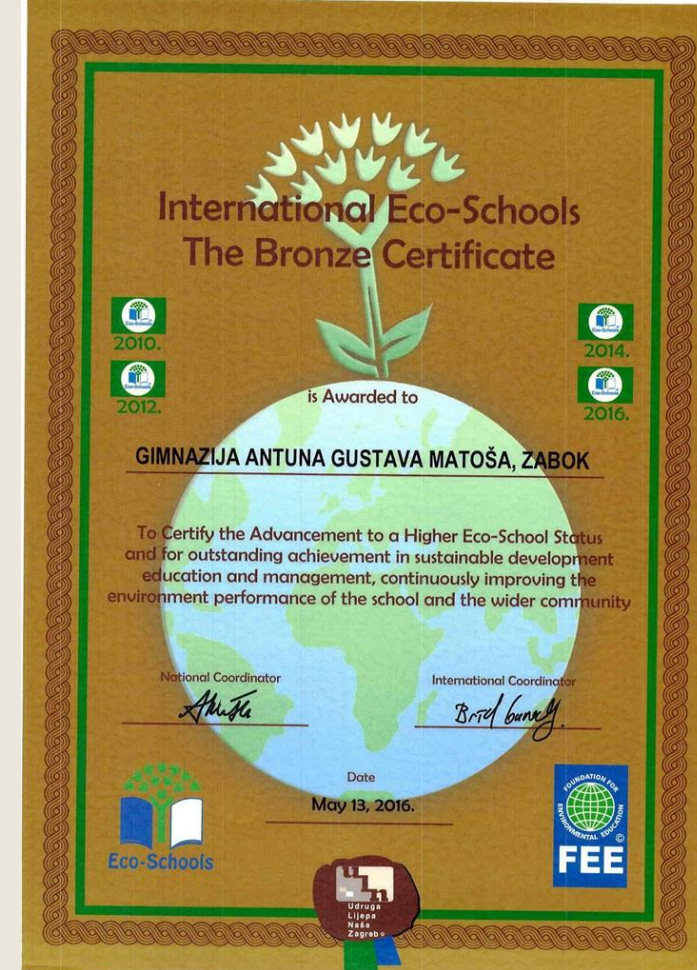


PROJEKTNA NASTAVA: BILJNE VRSTE IZ NAŠEG VRTA I NJIHOVA LJEKOVITA SVOJSTVA

Irena Futivić, profesor biologije kemije
Gimnazija Antuna Gustava Matoša-Zabok

MEDNARODNA KONFERENCA: EKOŠOLE IN TRAJNOSTNI RAZVOJ,
10. junij, 2023. OŠ Leskovec pri Krškem

- Gimnazija Zabok-eko škola.
- Arboretum gimnazije nastao 2002. godine u sklopu projekta „Čovjek koji je sadio drveće”.



Ciljevi aktivnosti škole

- Poticanje ekološke osvješčenosti učenika
- Briga za okoliš i ekološke aktivnosti
- Povezanost s nastavnim kurikulumom- upoznavanje biljnih vrsta i njihovih karakteristika, dobrobiti od biljaka čajevi, tinkture i kemijski preparati.



Aktivnosti škole tijekom 2021.-2023.godina

- Aktivno sudjelovanje u aktivnostima projekta
„Green therapy” i „Natural is good chemical is bad”
- Određivanje biljnih vrsta koje se koriste za pripremu čaja
izrada fotoherbarija
- Upoznavanje s biljkama koje se tradicionalno koriste za
izradu čaja te istraživanje njihovih ljekovitih svojstava
- Priprema čajeva i istraživanje boja u čaju te korištenje čaja
kao indikatora za određivanje pH vrijednosti.
- Dokazivanje tanina u zelenom čaju.



Upoznavanje učenika s biljnim vrstama koje se koriste u pripremi čaja

- Učenici izrađuju fotoherbarija biljnih vrsta koje koristimo za izradu čajeva

- <https://bit.ly/43BvfWx>



Salvia officinalis- kadulja, sage

- Sage has a variety of uses, but is most commonly used to obtain essential oil. Sage tea is used for dressings for wounds and for rinsing the mouth and throat for disinfection.
- The leaves of common sage have been used traditionally as a remedy against diabetes. Human and animal research indicates that it may help lower blood sugar levels.
- Sage is one of the plants that is considered useful for diabetics. One study found that sage can help prevent diabetes, other studies have shown that it reduces the risk of sudden changes in blood sugar levels.
- When scientists tested sage on diabetics, they found that sage tea can be a useful dietary supplement, precisely because of its ability to regulate blood sugar levels.



Figure 4. Sage leaves and flower



Sebastian

Taraxacum officinalis- maslačak, dandelion

- Dandelions are high in antioxidants, so dandelion oil for skin may help reduce the signs of aging
- Dandelion flowers are also high in vitamins A, C, E, and K, they have small amounts of vitamin B, dandelion flower oil also has iron, magnesium, folate, and potassium
- Dandelions were also proven to fight inflammation, hydrate the skin, and boost collagen production
- Dandelion oil uses are numerous, you can use dandelion infused oil on your skin like you would any other oil or you can apply it alone or use it in DIY bath and body recipes in place of other oils



Figure 8. dandelion fruits and flowers

Marta's



Edukacija učenika o eteričnim uljima u biljaka i njihovoj ljekovitosti

Essential oils definition

The essential oils are concentrated hydrophobic liquids containing volatile compounds obtained from plants. They are complex compounds which are characterized by a strong odor and are formed from various plants metabolites. They are limpid and soluble in lipid/organic solvents and possess density less than water.

Belsam
High School Ibn Khaldoun

video 1653328876 (1:16)

Play ▶

Essential oils are derived from the extraction of plants. This is achieved by cold pressing or steam distillation. They can then be used topically or diffusely through the air to help you with health problems.

Gymnasium Zabok

Methods of extraction of essential oils

Essential oils are generally obtained by hydro or steam distillation. Hydrolyzation, a process which involves the complete immersion of plant materials in water, followed by boiling. This method protects the oils extracted to a certain degree since the surrounding water acts as a barrier to prevent it from overheating.

Fida
High School Ibn Khaldoun

Pharmacological applications of essential oils

Essential oils from plants or herbs have found applications in folk medicine, food flavoring and preservation, as well as in fragrance industries. The Essential oils commonly found in fruits, vegetables, herbs, and various plants have been shown to possess possible health benefits with antioxidant, antimicrobial, antitumor, anticarcinogenic, anti-inflammatory, antiplatelet aggregation, angiogenesis inhibitory and antidiabetic activity activities .

Senda
High school Ibn Khaldoun



Simple apparatus of destilacion

Mint oils can be distilled at home with ordinary canning equipment. whole plants (or at least the leaves) are loosely packed to depth of about 10 centimeters or more in the bottom of a large canning pot. Then a wire rack or other support is also put in the pot and a bowl is placed in the middle on the rack. Enough water is added to cover the vegetation the pot is placed on a range and the lid is inverted over it. The water is brought to a boil and as it does so, ice is placed on the inverted lid. The oils vaporize and condense when they contact the cold lid, dripping then from the low point into the bowl. of course some moisture also condenses, but the oil, being lighter, floats on top. peppermint oil is easy to collect this way and will keep for a year or two in a refrigerator.

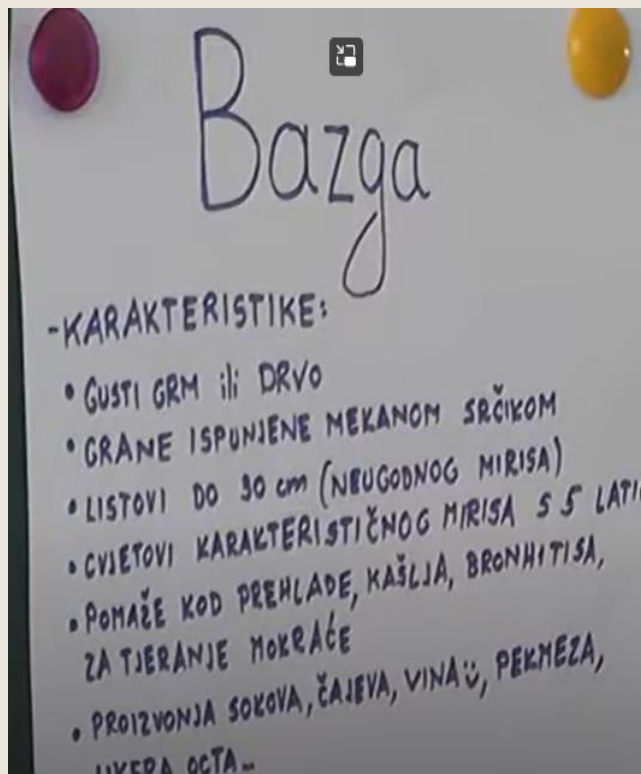
Essential oils are highly valued natural substances, obtained by extraction from so-called aromatic plants and have been known since ancient times. They were used in various religious rites, in the preparation of perfumes, ointments and balms, in various cosmetic preparations, to flavor food and drink, and as the first medicines. Over the years and with the change in lifestyle, people have increasingly abandoned the use of medicinal herbs and forgotten the benefits of essential oils. The rebirth of interest in them took place only in the 19th century when a French chemist, after an injury in the laboratory, dipped his hand in a glass with lavender and cured it. He is the originator of aromatherapy.

Gymnasium Zabok

The green therap

Edukacija učenika o pravilnoj pripremi čaja

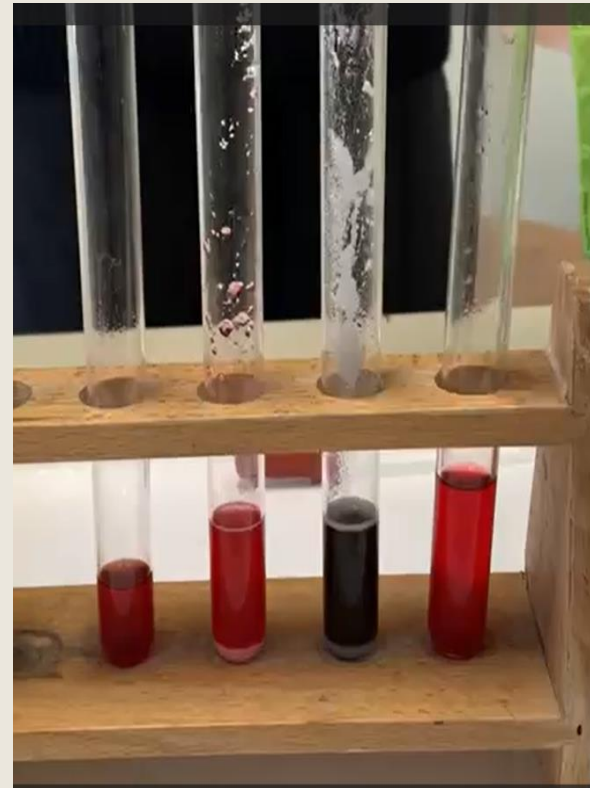
- Tijekom obilježavanja botaničkih vrtova i arboretuma educirali smo učenike o ljekovitosti biljaka i tradicionalnom načinu pripreme čaja
- Upoznavanje s tradicionalnim biljkama bazga, kamilica, lipa, kadulja, majčina dušica kamilica.
- <https://www.youtube.com/watch?v=buOgGhvTBlo>



Čaj kao indikator- aktivnosti u učionici



- Upoznavanje s prirodnim bojama iz zelenog čaja, čaja kamilice i šipka
- Ovisnost boje čaja o pH vrijednosti.
- <https://bit.ly/3N2djyH>



Dokazivanje tanina u čaju

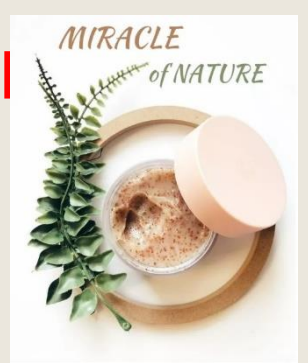


- odgovorniji za oštar i gorak okus, te boje čaja
- tanini imaju određena antioksidativna i antimikrobna djelovanja

<https://bit.ly/45P7yvR>



Istraženo je djelovanje eteričnih ulja na organizam i njihova upotreba u izradi prirodne kozmetike



- Učenici istražuju načine dobivanja kozmetike kroz povijest.
- Istražuju štetne kemikalije u kozmetičkim preparatima.

Cosmetics in ancient Rome

Cosmetics in the Roman world were used for ritual purposes and were an important part of medicine, until they began to be used on a daily basis. It was intended for women and it was not desirable for men to use it, but it was important for men to maintain hygiene. The Romans considered that only "preserving beauty" was acceptable, not "unnatural beautification".

Cosmetics they used: creams and lotions (donkey's milk, honey), blush (red ochre, rose petals, poisonous red lead, dregs of wine and mulberry), lipstick (beetroot juice and beeswax with a little henna), mascara (burnt iris), eyeshadow (nightshade, kohl), nail polish (sheep's fat and blood), perfume powder (fatty substances from a waxy substance called lead bleach), perfumes (iris base), hair dye (wine vinegar), hair removal strips (resin and rosin)

ROMAN WOMEN PREFERRED LONG AND THICK EYELASHES, LARGE EYES AND PUPILS, SMOOTH AND SOFT SKIN. IT WAS ALSO DESIRABLE THAT THEY SMELL NICE BECAUSE THEY WERE CONSIDERED HEALTHY. A LOT OF MAKE-UP AROUND THE EYES IS NOT DESIRABLE AND WAS UNACCEPTABLE.

Made by: Jana Šenjug
Mentor: prof. Irena Futivić
School: Gymnasium A.G.Matoš, Zabok

HISTORY OF COSMETICS

κοσμητική

- the word cosmetics comes from the Greek language, from the word κοσμητική (kosmitiki) which means the art of decorating
- today it is a special field of medicine
- through history it has adapted to the hygienic and aesthetic requirements of certain periods and environments

Cosmetics of the Egyptians

- from the earliest times of the Egyptian empire, men and women of all social classes applied eyeliner, eye shadow and lipstick
- before applying any makeup they would first prepare the skin
- face masks made of milk and honey were popular treatments back then
- they applied incense to the armpits as a deodorant and oils with flowers or spices to soften the skin
- the toxic lead-based mineral from which kohl (black substance they would put around the eyes) is made has antibacterial properties in combination with moisture from the eyes
- kohl was used by both sexes and all social classes to protect the eyes from the intense glare of the desert sun
- they invented a natural hair removal method with a mixture of honey and sugar
- to obtain lipstick, other color was usually mixed with animal fat or vegetable oil, and it is known that Cleopatra crushed insects for the perfect shade of red

Made by: Larisa Legčević.
Mentor: Irena Futivić
School: Gymnasium A. G. Matoš, Zabok

Harmful substances in cosmetics

The key ingredients that make up most cosmetic products are various preservatives, thickeners, moisturizers, dyes, fragrances, etc. All of them can be of natural or artificial origin, and an average cosmetic product consists of 10 to 15 such ingredients.

1. Parabens

Parabens are actually synthetic preservatives that are used to extend the shelf life of cosmetic products and prevent the growth of microorganisms. If a cosmetic says that it is organic or natural, it only means that the percentage of parabens in it is lower than usual. But do not forget that this affects the shelf life. In addition to causing skin irritation, parabens can disrupt the body's hormonal balance.



2. Silicones

regardless of whether they are in hair or skin products, stay on its surface and therefore do not penetrate into deeper layers, a protective layer can be formed on the skin that prevents water loss, but also retains sebum at the same time, dead cells and bacteria.



3. DEA / TEA / MEA (6. DEA / TEA / MEA)

They are used as emulsifiers and foaming agents in shampoos, soaps and other foaming products. They can react in the formation of certain carcinogenic substances, and cause skin and eye irritation.



4. Formaldehyde

is a colorless, poisonous gas with a specific, very pungent smell, soluble in water. It is used in industry and construction products, but also in cosmetics. Formaldehyde primarily protects against bacteria and acts as an antiseptic, but it leads to a series of changes on the skin and various forms of irritation.

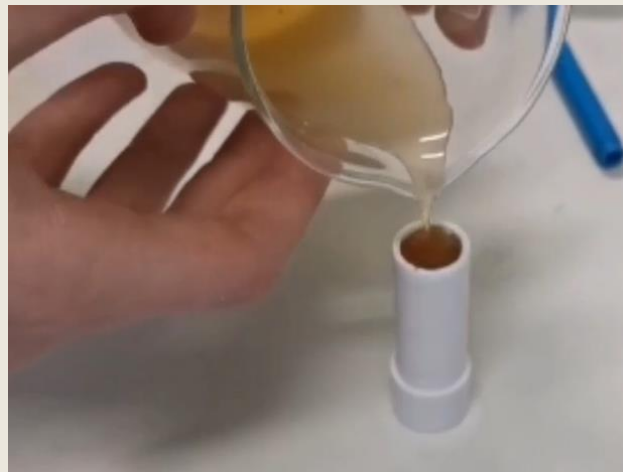
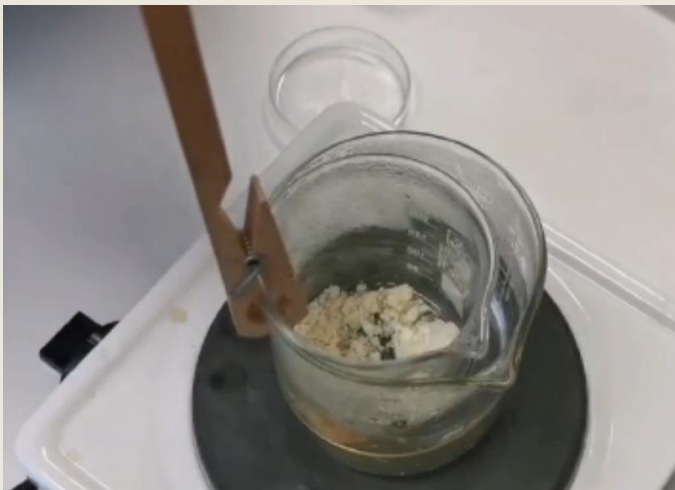
Izrada krema

- Kokosovo ulje, maslinovog ulja, pčelinjeg voska i dodatka eteričnih ulja.



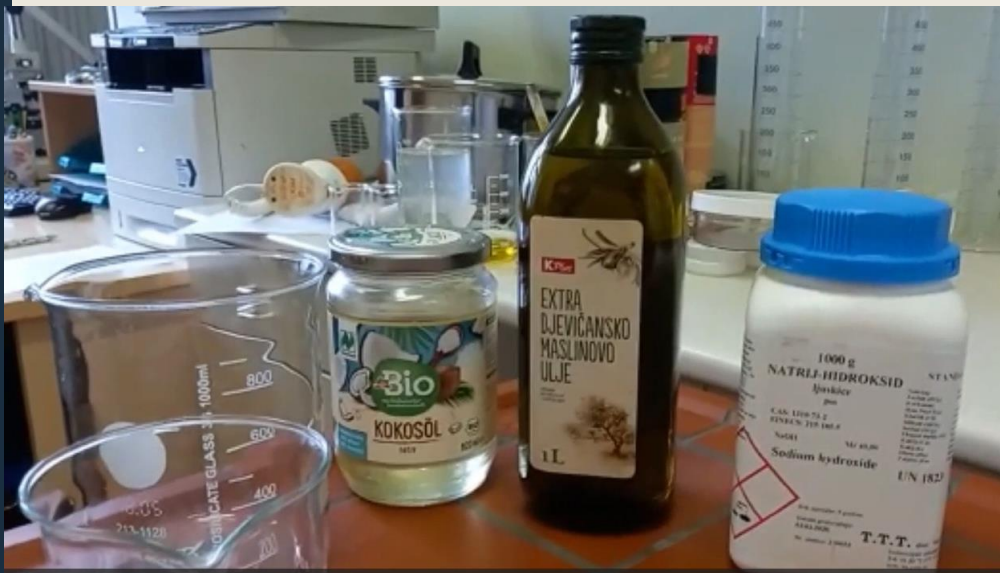
Balzam za usne

- Kakao maslac, kokosovo ulje, pčelinji vosak + eterično ulje limuna.
- <https://bit.ly/3WEamaS>



Izrada sapuna

- Dobivanje sapuna hladnim postupkom od NaOH maslinovog i kokosovog ulja.
- <https://bit.ly/42cuxh9>



Vidljivost našeg rada

- Izdavanje publikacija na stranici škole.
- Izrada aplikacije za mobitel- dobivanje prirodne kozmetike
- Prezentacija u školi i izvan škole na ŽSV, Državnim skupovima i e-twinning konferencijama.
- Sudjelovanje na Tjednu botaničkih vrtova.



Zapadna medonosna pčela (*Apis mellifera*) obilazi cvijet meksičkog kaktusa *Neobuxbaumia polylopha*



Hvala na pažnji

- Molim vas ispuniti upitnik
- <https://forms.office.com/e/89VepViBrk>

Evaulacija predavanja: Biljne vrste
iz našeg vrta i njihova ljekovita
svojstva

