Міністерство охорони здоров'я України
Тернопільський національний медичний університет імені І. Я. Горбачевського МОЗ України

Матеріали VI Всеукраїнської науково-практичної конференції з міжнародною участю
«ХІМІЯ ПРИРОДНИХ СПОЛУК»
27-28 жовтня 2022 року, м. Тернопіль

Materials of VI Ukrainian Scientific Conference with the international participation
«CHEMISTRY OF NATURAL COMPOUNDS»
October 27-28, 2022 Ternopil

Тернопіль 2022

ROSA DAMASCENA FLOWER PETALS AND BUDS COMPARATIVE PHYTOCHEMICAL ANALYSIS

Karpiuk U.V.[1], Abudayeh Z.H.[2], Minarchenko V.M.[1]
[1]Bogomolets National Medical University, Kyiv, Ukraine
[2]Isra University, Amman, Jordan

Rosax damascena Mill., is a plant of the Rosaceae family, Rosoidae subfamily. It is a cross between *Rosa phoenicia* and *Rosa gallica*. The origin of *R. damascena* is the Middle East. Nowadays, Bulgaria, Iran, Syria, Turkey, India are the main producers of *R. damascena* plant raw material in the world [1].

Buds and flower petals are the plant raw materials of *R. damascena.* Their main components are essential oils, anthocyanins, flavonols, flavones, tannins, carotenoids. Numerous data shown, that rose oil contains citronellol, geraniol, nerol as the components on which depends the basic character of rose oil. Paraffins like nonadecane, heneicosane, pentacosane etc. are natural constituents of rose oil. Rose oil solidifies at room temperature and when refrigerated due to their presence. The content of essential oils and the content of their components depends on the area of *R. damascena* growing [1].

European Medicines Agency assessment report says that *R. damascena* is used as anticonvulsant, hypnotic, immunomodulating, analgesic, antimicrobial, antioxidants, anti-inflammatory, antinociceptive, antidiabetic, gentle laxative. and anti-aging [1].

R. damascena buds are used in industrial scale. Flower petals could be an alternative MPM. It also has been noticed that, is a possible source of biological active compounds. Buds are mostly used for export and obtaining rose oil and rose water. But flower petals could be stored and used later when distilleries cannot accept the whole produced plant marerial anymore [1].

The aim of the work was the comparative phytochemical study of *R. damascena* buds and flower petals.

Flower petals and buds of *R. damascena* (Figure 1.) were collected from the Amman, Jerash, Irbid and Ajloun areas in Jordan, between late April and June 2020. Buds were harvested before flowering (budding stage) and petals during flowering. MPM samples were dried by air-shadow drying and grinding after (sieve size 3,5 mm).

A.  B. 

Figure 1. *Rosa damascene*: A. flower petals; B. buds

Preliminary phytochemical analysis of the *R. damascena* flower petals and buds were conducted by chemical and microchemical reactions. Determination of weight loss on drying and mucilage index was carried out according to the State Pharmacopoeia of Ukraine (SPhU). To determine anthocyanins in *R. damascena* buds and flower petals extracts, according to the SPhU monograph “Rosae fructus”, spectrophotometry method was used [2,3]. The qualitative composition and content of volatile compounds were determined by gas chromatography/mass-spectrometry (GC/MS).

Preliminary phytochemical analysis shown the presents of polysaccharides, free and bound monosaccharides, tannins, flavonoids and saponins. Alkaloids are absent. Microchemical reactions proves the presence of essential oils, mucilage, and pectins.

R. damascena flower petals and buds’ loss on drying was 6.69±0.20% for flower petals and 6.65±0.13% for buds. The swelling index was 5±0.2 and 15±0.6 for buds and flower petals

respectively. After determination of anthocyanins from MPM of *R.damascena* by spectrophotometry, we have noticed that anthocyanins of buds are present in amount of 0.21±0.013% and flower petals – 0.12±0.021%.

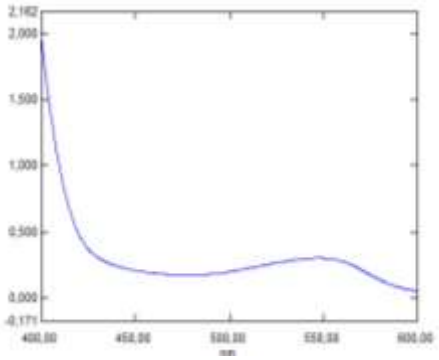

Figure 1. UV-spectrum of *R.damascena* buds extract (absorption maximum 555 nm)

The determination of the volatile compounds by GC/MS shown the presence of 18 components in flower petals and 17 in buds. Heneicosane, nonadecane and octadecane are present in large quantities in both MPMs. Both buds and flower petals contain approximately the same amount of citronellol.

The differences in qualitative composition and quantitative content of *R. damascena* bus and flower petals volatile compounds can help to recognize the falsified MPM or essential oil. The results could be used for the development of quality control methods for buds and flower petals of *R. damascena*.

References

1. Nayebia, N., Khalilib, N., Kamalinejadc, M. and Emtiazy, M. (2017) A Systematic Review of the Efficacy and Safety of Rosa damascena Mill. with an Overview on Its Phytopharmacological Properties. Complementary Therapies in Medicine, 34, 129-140.

2. Derzhavna Farmakopeya Ukrayiny / Derzhavne pidpryyemstvo "Ukrainskyi naukovyi farmakopeynyy tsentr yakosti liarskih zasobiv .— 2-e vyd. — Dopovnennia 5. Kharkiv.2021. 424 s.

3. Derzhavna Farmakopeya Ukrayiny. 2-d edition. Vol. 3. (2014). Kharkiv: Derzhavne pidpryyemstvo "Ukrainskyi naukovyi farmakopeynyy tsentr yakosti liarskih zasobiv", 732.

PLANTS AS A SOURCE OF NEW ANTICONVULSANT AGENTS - IN VIVO STUDIES

Kinga Gawel

Medical University of Lublin, Lublin, Poland

Problem. Epilepsy is common neurological disorder. It is estimated that 1% of society worldwide suffers from different types of seizures [1]. Currently, there is more than 30 antiseizure drugs available in the market, but still 30% of patients are resistant to those treatment [2]. Thus, there is ongoing need to search for new antiseizure drugs which will be useful for these patients, and additionally will be devoid of side effects [3]. Plants seem to be a good source of new anticonvulsants, an example of which is cannabidiol recently approved as add-on therapy for Dravet syndrome patients [4].

The aim of the studies were to evaluate the effect of *Zingiber officinale* (ginger) rhizoma extract and its active constituent – 6-gingerol, in the pentylenetetrazole (PTZ)-induced seizure model in larval zebrafish as well as palmatine isolated from *Berberis sibrica* radix. Moreover, some possible mechanisms of 6-gingerol's anticonvulsant activity were determined.

Research methods: For *in vivo* studies, larval zebrafish up to 7 days post-fertilization were used. The larvae were bathed in the extracts or solutions of isolated compounds. Subsequently, tonic-clonic-like seizures were induced by the acute application of PTZ (20 mM). Locomotor activity was measured using tracker (Zebrabox, Viewpoint, France). Local field potential (LFP)