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Lamb's lettuce (*Valerianella locusta* L.)-antioxidant activity

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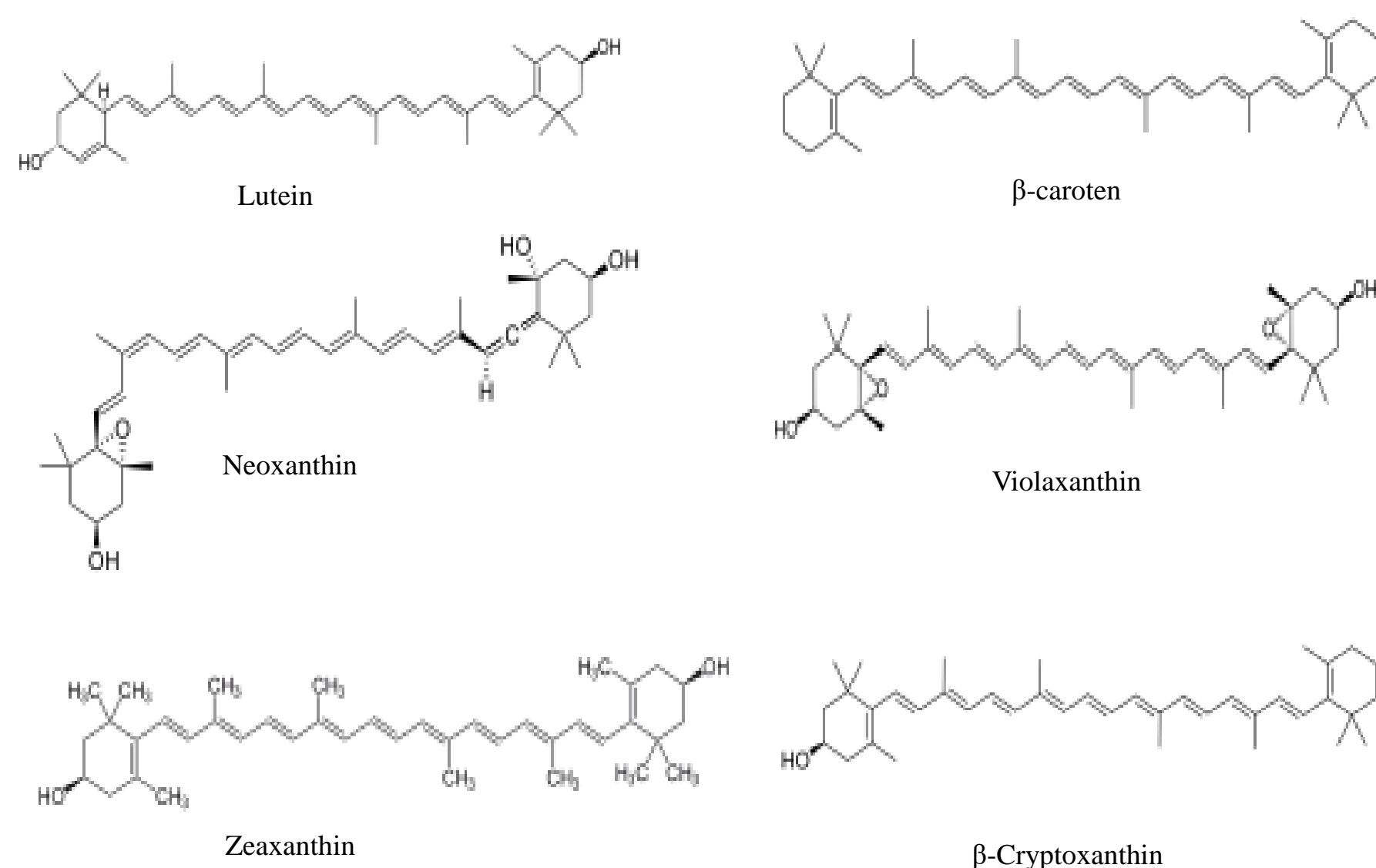
Abstract: *Valerianella locusta* is a plant with small green leaves, very resistant, originating from the Mediterranean area and which is found in certain areas of the European continent, the northern part of Africa and in America. In Europe, the largest producer is France, which has a percentage of 75% of the world production. Lamb's lettuce as it is also called *Valerianella locusta* has a high nutritional value due to its content in polyphenolic compounds (flavonoids such as rutin, luteolin, kaempferol-3-o-rutinoside and genistein), fatty acids (α -linolenic acid), sterols, phenolic acids (chlorogenic acid), carotenoids. *Valerianella locusta* is also a rich source of vitamins, especially vitamin C, folic acid (vitamin B9) and minerals such as potassium, iron, calcium, phosphorus, etc.

• Introduction

Lamb's lettuce, which belongs to the *Valerianaceae* family is a plant that is distinguished by the way its small, rounded, dark green leaves are arranged in the form of a bouquet or rosette [4]. Native to the Mediterranean region, corn salad is widely distributed across regions of America, North Africa, and Europe. European countries producing significant quantities annually include Germany, France, Italy, the Netherlands, and Belgium. Among these, France is the largest producer of *Valerianella locusta*, accounting for about three-quarters of global production, while Germany is the largest consumer[2].

• Chemical composition

Valerianella locusta is known for its balanced composition, having a valuable nutritional quality. The leaves of lamb's lettuce contain a variety of bioactive compounds, such as phenols, sterols, carotenoids, vitamin C, folic acid and omega-3 fatty acids. In the study conducted by Długosz-Grochowska et al. the composition of lamb's lettuce was analyzed in more detail and the presence of three forms of folate and seven phenolic compounds was reported. Among green leafy vegetables, lamb's lettuce leaves represent the most valuable source of chlorogenic acid. In addition, tetrahydrofolate (vitamin B9), carotenoids and vitamin C are also found in large quantities[3]. Several natural pigments (carotenoids) with a strong antioxidant effect have been identified in lamb's lettuce: lutein, antheraxanthin, β -cryptoxanthin, β -carotene, neoxanthin, violaxanthin and zeaxanthin[3].



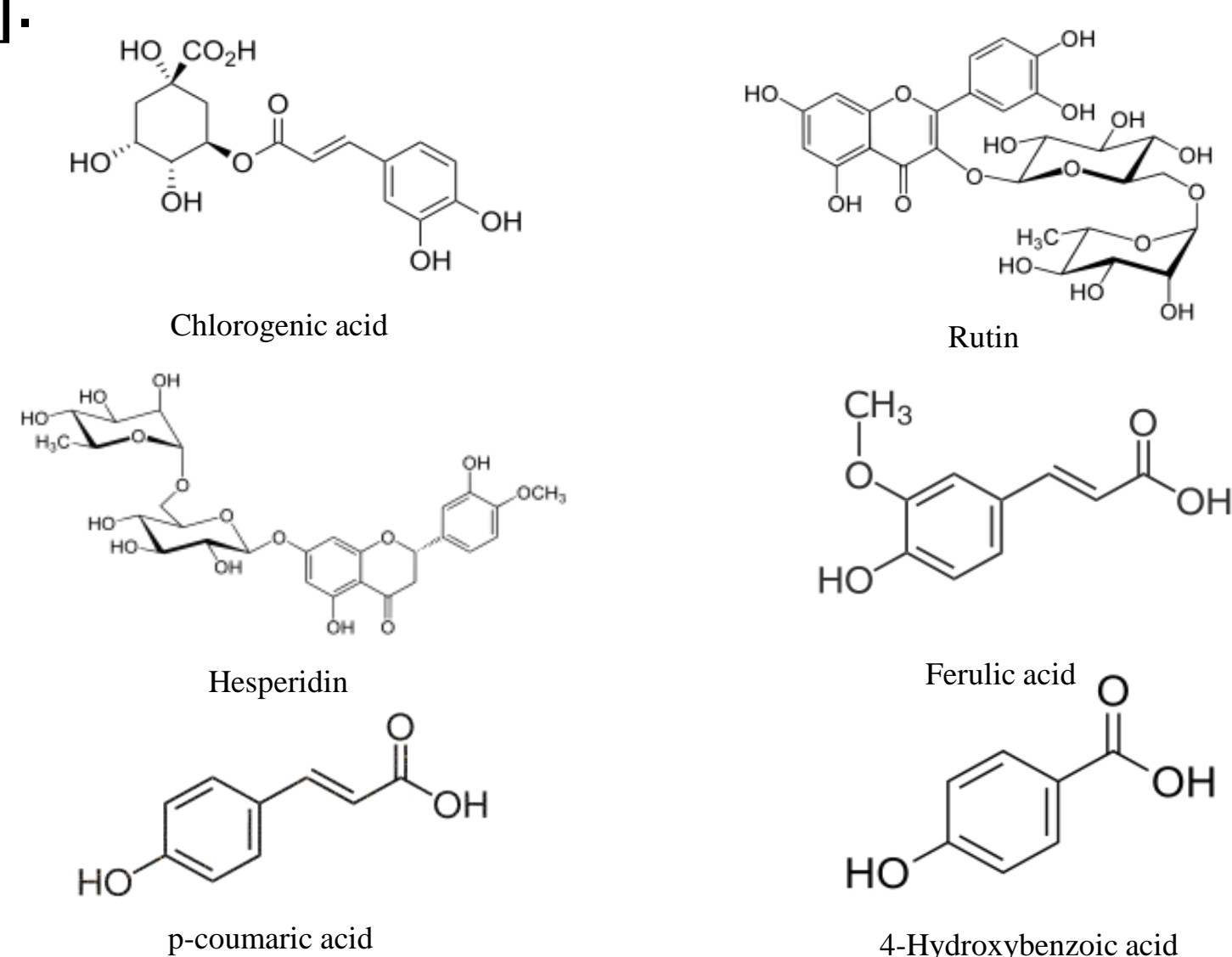
• Antioxidant activity

Antioxidants prevent the attack of free radicals, reducing the risk of carcinogenic diseases. In the case of plants and vegetables, one of the most studied components is chlorophyll. This is affected by several parameters, such as temperature, light and other environmental factors. In fact, chlorophyll is a powerful antioxidant with a very important role that provides plant products with antioxidant capacity. The most studied food product of plant origin with a high chlorophyll content is lamb's lettuce.

The results obtained from the study conducted by Cs. Orbán et al. showed that the lamb's lettuce contains a large amount of chlorophyll and exhibits high antioxidant activity. The same study shows that the duration and conditions of storage greatly influence the chlorophyll content and antioxidant activity, respectively, so that the highest value was found in fresh lamb's lettuce, which decreases after 9 days of storage to less than half of the initial one [7].

Determination of antioxidant activity can be done using the DPPH radical (2,2'-diphenyl-1-picrylhydrazyl) with which the lamb's lettuce extracts react. The absorbance is measured using a spectrophotometer, and then the results obtained are interpreted according to the neutralization of DPPH[8].

In the study conducted by Olga Długosz-Grochowska et al. 7 phenolic compounds were identified from *V. locusta*: chlorogenic acid, rutin, hesperidin, ferulic acid, p-coumaric acid, p-hydroxybenzoic acid (4-hydroxybenzoic acid) and diosmetin [9].



• Conclusions

Lamb's lettuce has a high content of polyphenols that determine its antioxidant activity, which decreases with increasing temperature and storage time. The antioxidant activity of lamb's lettuce is much higher than that of broccoli. Lamb's lettuce has many beneficial effects on the body, such as: reducing the risk of cardiovascular disease and cancer, reducing inflammation, etc.