

## Streszczenie w języku angielskim

Plants throughout history have played a key role as a source of medicinal compounds. Infusions, decoctions, ointments and tinctures of plant substances have been the primary medicines used for various ailments. An interesting group of plants with broad biological activity is the genus *Eleutherococcus*, which includes 29 species growing mainly in Asia (China, Japan, Korea). The best-known representative is *Eleutherococcus senticosus* (Rupr. & Maxim.) Maxim., widely used in Traditional Far Eastern Medicine. These plants, thanks to their diverse phytochemical composition (triterpenes, flavonoids, lignans, phenolic acids, chalcones, stilbenes, diterpenes), exhibit a wide spectrum of biological activity. A lesser-known representative is *Eleutherococcus divaricatus* (Siebold & Zucc.) S.Y.Hu.

The purpose of this study was to find out whether *E. divaricatus* contains compounds that are hyaluronidase and tyrosinase inhibitors. Tyrosinase and hyaluronidase inhibitors present on the market have many adverse properties. Hydroquinone and arbutin show mutagenic effects and have side effects such as burning, contact dermatitis, irritation and erythema. Kojic acid is carcinogenic and has low stability during storage. L-ascorbic acid is unstable and sensitive to external factors (oxygen, light, pH, temperature). The only hyaluronidase inhibitor available is escin, which has low bioavailability. Therefore, it is necessary to search for new, more effective and safer substances.

I published the results of my own research as two original papers, which, together with a review paper on plant hyaluronidase and tyrosinase inhibitors, are included in the monocyte constituting my dissertation.

The results of our own research indicate the presence of inhibitors of hyaluronidases (bHYAL, hHYAL) and tyrosinase (mTYR) in the fruit and root of *E. divaricatus*. The ethyl acetate fraction obtained from a 75% methanolic extract of the root showed the strongest inhibition. The same fraction inhibited hyaluronidase present in the blood serum of children diagnosed with acute lymphoblastic leukemia. Polyphenolic compounds (mainly phenolic acids and cavoylquinic acid derivatives) are responsible for the activity.

The presence of hyaluronidase inhibitors creates the possibility of using the fruits and roots of *E. divaricatus* in alleviating inflammation and immune deficiency. Considering the results of my research, I have provided scientific evidence for the legitimacy of the use of *E.*

*divaricatus* in ethnomedicine in China and Siberia, in diseases with immunological and inflammatory causes.

Keywords: *Eleutherococcus divaricatus*, hyaluronidase, tyrosinase, leukemia, polyphenols

A handwritten signature in blue ink, appearing to read "John G. Smith". The signature is written in a cursive style with a large, prominent "S" at the end.