

Genetic interrelationships and origin of the *Dibothriocephalus latus* (syn. *Diphyllbothrium latus*) (Cestoda: Diphyllbothriidea) – first insight

Alžbeta Radačovská¹, Eva Bazsalovicsová¹, Ivica Králová-Hromadová¹

¹ Institute of Parasitology, Slovak Academy of Sciences, Košice, Slovakia

The broad fish tapeworm *Dibothriocephalus latus* is a causative agent of human food-borne disease called diphyllbothriosis. Medical importance, scattered geographical distribution and unknown origin of *D. latus* in Europe and North America make this species an interesting model for population genetics. For that purpose, broad spectrum of geographically distinct populations of *D. latus* from Europe, North and South America, has been applied in the current work. As the effective molecular markers, six microsatellite markers were recently designed by microsatellite library screening using Next-Generation Sequencing (NGS) approach and validated for future studies on population genetics of *D. latus*. In addition, three genes of mitochondrial DNA (mtDNA) were selected as molecular markers: cytochrome c oxidase subunit 1 (cox1, partial sequence), cytochrome b (complete sequence) and nicotinamide dehydrogenase subunit 3 (nad3, complete sequence). As a result of our study, the highest level of genetic polymorphism was detected in *D. latus* from Russia, which very probably represents the original locality of the tapeworm. On the contrary, population of *D. latus* from the Alpine lakes region, (Lakes Geneva, Neuchâtel, Biel, Como, Maggiore, Iseo) was genetically very homologous indicating the introduced character of the subalpine lakes population. Europe, or more precisely Eurasia, seems to be the original continent of *D. latus*, from which it might be imported to other continents (North and South America) along with its second intermediate (fish) or definitive hosts (human).

ACKNOWLEDGEMENTS. The work was financially supported by the Slovak Research and Development Agency under contract APVV-15-0004 and Slovak Grant Agency VEGA no. 2/0134/17. Roman Kuchta (Czech Republic), Andrea Gustinelli (Italy), Barbara Wicht (Switzerland), Julia Hermann (Russia) and Guna Bagrade (Lithuania) are cordially acknowledged for material donation.