

And Then There Were Three: Lymnaeid Vectors of Fascioliasis in Highly Endemic Province of Argentina

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Resumen

Mendoza province lies to the west of Argentina, its backbone being the Andes Mountains. In its valleys can be found very high endemicities of fascioliasis in cattle , sheep, goats , horses, mules, donkeys and even introduced llamas. Up to the present, such high prevalences were always linked to the presence of only one lymnaeid vector species described in the region, *Lymnaea viatrix* , similarly as for most of Argentina. However, traditional malacological methods have proven to be insufficient to reach species level classification in the *Galba-Fossaria* group⁴.

Thus, DNA sequencing techniques were applied to lymnaeids from the different endemic areas of Mendoza. Snails were sampled in altitudes ranging from 800 to 3000 m.a.s.l. and from the five main river basins of Mendoza. Surprisingly, nuclear ribosomal DNA sequences of the 18S gene and the two spacers ITS-2 and ITS1 proved that what was previously thought to be only one species turned out to be three different

species: *L. viatrix*, *Lymnaea neotropica* and *Galba truncatula*. These were to be found associated with very high prevalences of fascioliasis in livestock and in regions where human cases have been reported. Even though the different species may overlap, they seem to prefer different ecological niches. This vector heterogeneity represents a very high adaptability of *F. hepatica* to colonize different ecosystems using different vectors; *L. neotropica* was found at lower altitudes with more benign climate, *G. truncatula* was found at very high altitudes with extreme climatic conditions and *L. viatrix* has adapted to intermediate conditions.

The haplotype of *G. truncatula* was identical to the one and only vector in the Bolivian Altiplano with the highest known human prevalences and intensities. The epidemiological consequences are complex due to the particularities of the different vectors and should be addressed if effective control measures are to be implemented. Presentado en el XII congreso mundial de parasitología en Melbourne, Australia, agosto 2010.