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DIFFERENCES BETWEEN ECHINOSTOMA REVOLUTUM (FRÖLICH) AND ECHINOSTOMA LIEI JEYARASASINGAM, HEYNEMAN, LIM, AND MANSOUR

Ryšavý et al. recently synonymized *Echinostoma liei* Jeyarasasingam, Heyneman, Lim, and Mansour, 1972 with *Echinostoma revolutum* (Frölich, 1802) without discussing the reasons, stating only that they „appear to be identical“ (Ryšavý B., Ergens R., Groschafft J., Moravec F., Yousif F., and El-Hassan A. A., Folia parasit. (Praha) 20: 293—296, 1973). They apparently studied adult worms only. However, it has been known for some time that species identification of echinostomes based only on adult morphology may be misleading, particularly for 37-spined *Echinostoma* species (Sandground J. H. and Bonne C., Amer. J. trop. Med. 20: 511—535, 1940; Nasir P., J. Parasit. 46: 833—847, 1960; Nasir P., Proc. helm. Soc. Wash. 28: 207—212, 1961; Lie K. J., Trop. geogr. Med. 16: 72—81, 1964; Lie K. J. and Umathevy T., J. Parasit. 51: 781—788, 1965). The adult *E. liei* and *E. revolutum* are indeed morphologically similar, but the cercariae show constant and distinct differences. The tail of the *E. liei* cercaria has two dorsal, two ventral, and two subterminal ventrolateral finfolds (Jeyarasasingam U., Heyneman D., Lim H. K., and Mansour N., Parasitology 65: 203—222, 1972). The dorsal and ventral finfolds are conspicuous, and the ventrolateral finfolds are difficult to see. The only finfold on the tail of the *E. revolutum* cercaria is a small, subterminal, dorsal one that is difficult to see (Beaver P. C., Ill. biol. Monogr. 15: 1—96,

1937). The cystogenous cells of *E. liei* cercariae contain ovoidal granules, and those of *E. revolutum*, long rods. Such differences are considered reliable features in species diagnosis of closely related echinostomes (Sandground and Bonne 1940, Nasir 1960, 1961, Lie 1964, Lie and Umathevy 1965).

To this, one should add biological, hostal, and geographical distinctions, which were discussed in the original publication. It appears likely that the 37-spined echinostomes represent a diverging group of sibling species in which host and geographic isolating mechanisms are diverging more rapidly than are the adult fluke characteristics, and the form commonly known as *E. revolutum* may well represent a species complex. We have found that only by a critical comparative study of all life-cycle stages can one adequately determine species distinctions among these evolutionarily interesting flukes. On the basis of a careful study of both biological and developmental characteristics, we conclude that *E. liei* and *E. revolutum* should be considered distinct species.

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