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Taeniasis and cysticercosis in a selected group of inhabitants from a mountainous province in North Vietnam

## Summary

This work reports on a study on Taeniasis/Cysticercosis in a selected group of inhabitants of a mountainous area in North Vietnam. The participants of the study were not randomly taken from the population but from a group of individuals that was suspected for taeniasis/cysticercosis because they had a reported history of passing proglottids and/or subcutaneous nodules and/or a reported history of seizures. One hundred and three persons participated in the study. They were subjected to a questionnaire, and blood and faeces sampled. A monoclonal antibody-based antigen detecting ELISA was used for serological diagnosis of cysticercosis. The stools were microscopically examined for the presence of helminth eggs and tapeworm carriers were treated and the tapeworms recovered for species identification by PCR-RFLP. The questionnaire survey revealed that a high rate of interviewees had the habit of eating undercooked pork, rare beef and blood pudding (80%, 79% and 78%, respectively). In addition, 13.6% (14/103) of the interviewed persons admitted to have eaten pork containing cysticerci. By Ag-ELISA we detected 13.4% (13/97) seropositive cases. One seropositive case was 14 years old while the 12 other cases were between 22 to 70 years old. There were significantly more sero-positives by Ag-ELISA among the males than in female participants in this study. The results of the examination of gastro-intestinal nematode infection showed high infection rates with *A. lumbricoides* (65.5%), hookworms (39.3%) and *T. trichiura* (23.8%). *Taenia* eggs were found in the stools of five individuals; among these one person was also positive in the Ag-ELISA, suggesting self- or auto-infection. Treatment of two persons who reported to pass proglottids in their stools resulted in the expulsion of tapeworms while the coprological examination was negative. Based on the molecular tests performed on the three *Taenia* samples that were collected from our survey, two of these could be identified as *T. s. asiatica* by PCR-RFLP; the third one was also tentatively identified as *T. s. asiatica* (percentage homology is 99.5%, 98.2% compared with *T. s. asiatica* and *T. saginata* sequence in the mitochondrial 12S rDNA gene), following repeated PCR tests and RFLP using different primer pairs and restriction enzymes, respectively. This sample appeared to have a gross-alteration in its sequence with the insertion of a 400 bp fragment in the mitochondrial 12S rDNA gene. It was concluded that Taeniasis and cysticercosis are common in the surveyed area and can be associated with clinical symptoms. The impact of *T. solium*, however, remains unknown. Moreover, the epidemiological situation of the different *Taenia* spp. is complex and needs further investigation.

### Keywords:

*Taenia solium*, *Taenia saginata asiatica*, Vietnam, taeniasis, cysticercosis, antigen detection, ELISA, PCR-RFLP, mitochondrial 12S rDNA gene, gene insertion.

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