

The initial kinetics of $\text{NH}_3/\text{NH}_4^+$ efflux from L_3 *Teladorsagia circumcincta*

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Abstract

The initial rate of $\text{NH}_3/\text{NH}_4^+$ accumulation in a medium containing L_3 *Teladorsagia circumcincta* was $0.18\text{--}0.6 \text{ pmol h}^{-1} \text{ larva}^{-1}$, which increased linearly with larval density. However it appeared that the larva-generated external concentration of $\text{NH}_3/\text{NH}_4^+$ did not exceed about $130 \mu\text{M}$. The rate of $\text{NH}_3/\text{NH}_4^+$ accumulation increased with temperature between 4°C and 37°C , declined with increasing pH or increasing external $\text{NH}_3/\text{NH}_4^+$ concentration and was not significantly affected by the concentration of the phosphate buffer or by exsheathing the larvae. We infer from these data that the efflux of $\text{NH}_3/\text{NH}_4^+$ is a diffusive process and that the secreted or excreted $\text{NH}_3/\text{NH}_4^+$ is generated enzymatically rather than dissociating from the surface of the nematode. The enzymatic source of the $\text{NH}_3/\text{NH}_4^+$ is yet to be identified. Since the concentration of $\text{NH}_3/\text{NH}_4^+$ in the rumen and abomasum is higher than $130 \mu\text{M}$, it is unlikely that *T. circumcincta* contributes to it, but $\text{NH}_3/\text{NH}_4^+$ may be accumulated from the rumen fluid by the nematode.

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