

Testosterone is positively related to the output of nematode eggs in male Alpine ibex (*Capra ibex*) faeces

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ABSTRACT

Question: Does testosterone suppress the immune system of males in a strongly sexually dimorphic and long-lived ungulate?

Immunocompetence handicap hypothesis: Testosterone promotes the development of secondary sexual characteristics and simultaneously suppresses immunological defence.

Organisms: Free-ranging and individually identifiable male Alpine ibex (*Capra ibex*).

Methods: In faecal samples, measure testosterone levels ($\text{ng} \cdot \text{g}^{-1}$) and the number of parasite eggs per gram of faeces (faecal egg counts). Determine social dominance by observing the outcomes of agonistic interactions in the field. Weigh males at a salt-lick scale.

Data analysis: Path analysis to examine the relationships between testosterone levels, dominance, body mass, age, and faecal egg counts.

Conclusions: We found a strong positive effect of testosterone on the amount of parasite eggs in the faeces of males. The level of parasite infection did not depend on any other tested variable. Testosterone therefore has an immunosuppressive effect in male Alpine ibex, as suggested by the immunocompetence handicap hypothesis.

Keywords: body mass, dominance, faecal egg counts, immunocompetence, immunosuppression, path model.

INTRODUCTION

The handicap principle suggests that exaggerated secondary sexual characters can be an index of male good health if they are costly to produce (Zahavi, 1975). Hamilton and Zuk (1982) suggested that elaborate secondary sexual characters evolve in males because they signal to females the genetic quality of the males and their greater resistance to parasites. The immunocompetence handicap hypothesis [ICHH (Folstad and Karter, 1992)] considers the

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