
Evolution of coinfections: altruism as an adaptive strategy

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Résumé

Coinfections are a major concern in public health, human and veterinary medicine and phytopathology but they are also an interesting subject for ecology and evolution. In a coinfecting host, the different parasite genotypes can interact in various ways thus creating diverse within-host dynamics that makes it difficult to predict the virulence of each genotype, i.e. the additional host mortality rate due to the infection, which affects the epidemiology at the between-host level. The growth rate of each parasite genotype can be affected by the parasite load of the other genotypes, either positively by mean of public goods (e.g. siderophores), either negatively in case of spite (e.g. bacteriocins), along other density-dependent interactions. Because there are two levels of competition between genotypes, one within the host and one between hosts, the best genotype for exploiting the resources of the host may not be the best for transmission between them. Very often, high overall parasite loads lead to shorter host lifespans. Therefore, we address the following question in the case of two parasite genotypes infecting the same host population: can favouring competitor's growth be an adaptive strategy in a coinfection context ?

Mots-Clés: evolution, epidemiology, coinfections, virulence, public goods, altruism

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