

Disruption of antigenic variation is crucial for effective parasite vaccine

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RESUMEN

Giardia lamblia is a human intestinal pathogen. Like many protozoan microorganisms, *Giardia* undergoes antigenic variation, a mechanism assumed to allow parasites to evade the host's immune response, producing chronic and/or recurrent infections. Recently, we found that the mechanism controlling variant-specific surface protein (VSP) switching in *Giardia* involves components of the RNA interference machinery and that disruption of this pathway generates trophozoites simultaneously expressing many VSPs. Here we use these altered trophozoites to determine the role of antigenic variation in a gerbil model of giardiasis. Our results show that either primary infection with trophozoites simultaneously expressing many VSPs or immunization with purified VSPs from the transgenic cells protects gerbils from subsequent *Giardia* infections. These results constitute, to our knowledge, the first experimental evidence that antigenic variation is essential for parasite survival within hosts and that artificial disruption of this mechanism might be useful in generating vaccines against major pathogens that show similar behavior.

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