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Current status and future prospects of developing vaccines for human helminth infections

Helminth infections are highly prevalent in the tropical and subtropical regions of the world. Currently over 2.0 billion people are infected with helminth parasites. With few exceptions, these parasites do not replicate in the human. Similarly, helminth infections rarely cause mortality, but are notorious for causing high morbidity leading to significant disability adjusted life years (DALY) lost. To survive in the host, the parasites have developed multitude of ways to evade the human immune responses. Significant amount of studies were focused on identifying the host immunomodulatory molecules and their mechanism of immune suppression. Current control strategy of helminth infection relies heavily on broad spectrum anthelmintic treatments. Luminal parasites are easily cleared by anthelmintic treatment compared to tissue dwelling parasites. However, treatments do not prevent future infections, especially in endemic areas where the spread of infection is rapid. Prophylactic vaccination can build protective immunity against the parasite in individuals and reduces the incidence and transmission of the disease. Presence of residual infections in a community can boost the protective immune responses generated by the vaccination. Significant progress has been made in the last two decades to develop a vaccine for human helminth infection. Among these the prophylactic vaccine for hook worm, schistosome and lymphatic filariasis is nearing clinical trials. Completion of the genome of the parasites and advances in recombinant DNA technology and immunology has significantly helped in identifying and characterizing several potential vaccine antigens for vaccine development against helminths. This talk will cover the current advances in vaccine development against helminths with special focus on developing a vaccine for lymphatic filariasis.

Biography

Ramaswamy Kalyanasundaram DVM, PhD, Professor & Head at University of Illinois, College of Medicine, USA. He mainly works on development of a vaccine against lymphatic filariasis a tropical parasitic infection that causes a gruesome and disfiguring condition in the human. Second major research focus is on gene mining and functional proteomics of schistosome and lymphatic filarial parasites. Several vaccine candidates and drug targets of the lymphatic filarial and schistosome organisms were identified in his laboratory using a phage-display cDNA expression library screening approach.

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