Vaccine for use in the prevention or treatment of leishmaniasis

Project Status

- **Vaccine tested in established mice model**

Benefits

- **Novel peptides for vaccination of animals and humans**
- **Induction of robust T cell response**
- **Protection of resistant animals**
- **Lesion volumes significantly reduced in vaccinated animals**

Patents

- **EP3524266A1**
- **WO2019154841A1**
- **National patent applications in Brazil and Mexico**

Offer

- **The technology can be licensed or assigned**
- **Collaborations regarding further development welcome**

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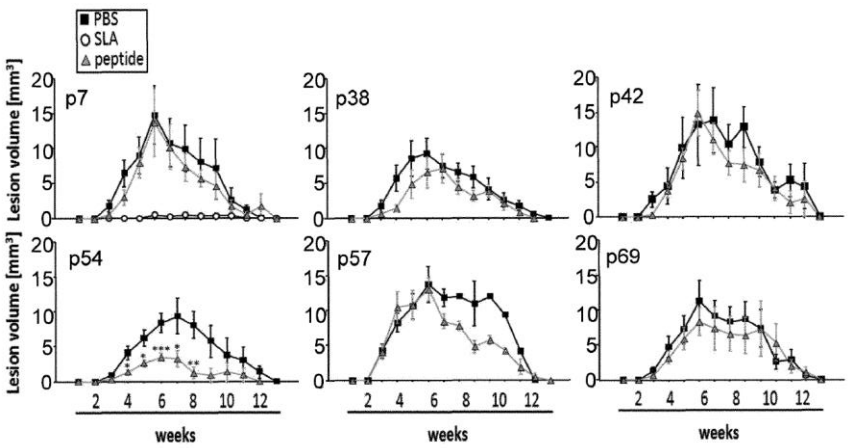
Scientists from University Medical Center Mainz (Germany) have successfully developed novel peptides for use as vaccine to prevent or treat leishmaniasis in humans or animals.

Leishmaniasis is a disease caused by Leishmania parasites transmitted by the bite of an infected sand fly (Phlebotominae). The clinical picture of the disease ranges from skin lesions to severe disfigurement and fatal systemic infection. The disease can be present in humans and mammalian animals in three different ways in form of cutaneous, mucocutaneous or visceral leishmaniasis.

So far, molecules (peptides or DNA) have tested as vaccines, yet, promising first findings were overshadowed by negative T cell responses or the tested antigens did induces a Th1 type of immune response but did not protect against infection. To date, only one second generation vaccine, Leish-111f, has been assessed in clinical trials. However, Leish-111f failed to protect dogs against infection and did not prevent disease development in a recent Phase III trial in dogs.

The inventors identified specific polypeptides and proteins isolated from L. major lysates that serve as efficient vaccines for the prevention or treatment of leishmaniasis. In more particular, the immunogenic protozoan-specific polypeptides induce a strong Th1/Tc1 cell-associated cytokine profile in vitro upon restimulation of primed C57BL/6 lymph node cells. A variety of proteins or polypeptide have proved to induce immune tolerance against Leishmania infection. However, four candidates, named as p54, Q4Q8Z6, Q4Q6L9, E9AE98, were able to protect resistant C57BL/6 and susceptible BALB/c mice (only proteins Q4Q8Z6, Q4Q6L9, E9AE98) mice against leishmaniasis challenge as compared to control mice.



As shown in the above figure, lesion volumes were significantly reduced in mice immunized with the novel vaccine candidates p54, Q4Q8Z6, Q4Q6L9 or E9AE98.