

**EVALAUTION OF IMMUNE RESPONSE AGAINST LEISHMANIASIS  
IN RESISTANCE C57 BL/6 MICE IMMUNIZED WITH LIPOSOMES  
CONTAINING AUTOCLAVED *Leishmania major* WITH BCG**

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Cutaneous leishmaniasis (CL) which caused by the different species of *Leishmania*, produces a skin ulcer that heals spontaneously in most cases, leaving an unsightly scar. Effort to develop an effective vaccine so far had been limited due to lack of an appropriate adjuvant. Protection against leishmaniasis depends on induction of T<sub>h1</sub> response or cell mediated immunity (CMI). Liposomes are microparticulate or colloidal carriers which form spontaneously when certain lipids are hydrated in aqueous media. Liposomes are a practical tool for delivery of vaccines, drugs, hormones and used as immunoadjuvant for different antigens. ALM (Autoclaved *Leishmania major*) has been used as a *Leishmania* candidate vaccine in field trials. The objective of this study was to investigate whether liposomes containing ALM and mixed with BCG (Bacillus Calmette Guerin) could selectively induce T<sub>h1</sub> response in resistance C57 BL/6 mice. The DSV-ALM formulation prepared by detergent solubilization (DSV) using egg lecithin and cholesterol (1:1 molar ratio) with BCG. Female C57 BL/6 mice (10 mice/group) were immunized subcutaneously (SC) with DSV-ALM-BCG (180 µg) and control groups received either DSV-ALM-PBS (180 µg), ALM alone (180 µg), PBS (Phosphate Buffer Saline), BCG and a control empty liposomes 3 times with 3 weeks interval. Immune responses of immunized mice and control groups were evaluated *in vivo* by skin test (DTH) and *in vitro* by titration of anti-*Leishmania* antibodies and IFN-γ, IL-4 production in culture supernatant (spleen lymphocyte proliferation) by ELISA. The results indicated that skin test thickness in mice received DSV-ALM-BCG was significantly higher than the other groups (P<0.05). The IgG isotype titration showed that IgG2a titer was also significantly higher in the above mentioned group compared to control groups (P<0.05). The result of cytokine assays showed that IFNγ which is an indication of a T<sub>h1</sub> response in group which received DSV-ALM-BCG was significantly higher than control groups (P<0.05). It seems that liposomes containing *Leishmania* antigens mixed with BCG could be used to induce a T<sub>h1</sub> response in resistance C57 BL/6 mice.