

## Conclusion

LmjMAPK10 a gene from *Leishmania major* offers cross-protection against heterologous species of *L. donovani* infection by inducing the cellular and antibody-mediated humoral response. In an in vitro macrophage T-cell co-culture system, T-cells from the M10 immunized groups of mice induce IL-12 and IFN- $\gamma$  but suppress IL-4 and IL-10 accompanied by NO-mediated controlled parasite growth. IL-7+M10 immunized *L. donovani* infected mice reduce parasite burden in spleen and liver along with amastigote count. The cellular and humoral response was observed against IL-7+M10 immunized mice. T-cell supernatants from the indicated group of mice enhance IL-12 and suppress IL-10. IL-7 regulates anti-leishmanial function by enhancing central and effector memory justifying itself as a key adjuvant for anti-leishmanial vaccine.