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A mixed colony of *Rattus rattus norvegicus* rats maintained in the animal house were found to be naturally infected with *Trypanosoma lewisi* a non-pathogenic parasite. *T. lewisi* in *R. rattus norvegicus* was used as an experimental model in this study to investigate parasitological and immunological aspects of this association.

Fluctuations of parasitaemia of *T. lewisi* ranged between 0.065 - 12.4% in naturally infected rats. SDS-PAGE revealed a profile of 9 and 8 *T. lewisi* proteins from high and low parasitemic infections respectively. While 6 of these parasite proteins were shared, 3 of 42.46 and 106 kDa and 2 of 56 and 112 kDa were found to be specific to high and low parasitemic infections, respectively.

The humoral and cellular host immune responses were studied by using immuno-blots and differential counts of rat blood cells. Only the 42 kDa protein specific to high parasitemic infections was detected on immuno blots. This may indicate the recognition of this protein by specific host antibodies which could be responsible for the decline of high parasitemic status of *T. lewisi* infections in rats. The expression of the 2 parasite antigens of 46 and 106 kDa may have led to the existence of high parasitemias. A significant increase in neutrophils and monocytes in high parasitemic rats may indicate a possible role of cellular response while a marked decrease in lymphocytes may imply immuno-suppression.

It is concluded that complex and balanced interactions between antigenic expressions of *Trypanosoma lewisi* and humoral and cellular immune mechanisms of rats lead to the non-pathogenic nature of these infections.