6. SUMMARY AND CONCLUSION

The aim of the present work was concern with studies on some clinical aspects and protein profile of malaria infected individuals in some coastal pockets of Tamil Nadu, India.

CLINICAL ASPECTS

6.1. Survey of malaria infected individuals in some coastal pockets of Tamil Nadu: The survey of malarial cases in the some coastal pockets of Thanjavur, Nagapattinam and Cudallore districts, Tamil Nadu, India indicated 42 male and 30 female positive cases out of 120 samples collected from September 2007 to November 2009. The maximum number (29) malarial cases were observed in Cudallore than Thanjavur (24) and Nagapattinam (19) districts. The samples contained only two species of parasites namely *P. falciparum* and *P. vivax* in different stages in the smears of malarial positive cases. Among 72 malarial cases, 46 *P. falciparum* and 26 *P. vivax* were identified.

6.2. Haematological aspects in blood samples of malarial infected individuals: The samples contain only two species of parasites namely *P. falciparum* and *P. vivax* in different stages in the smears. The observed parasitic stages were ring, gametocyte, schizont, merozoite and sporozoite. The erythrocyte sedimentation rate was significantly
decreased in malarial infected individual as compared with normal. The total leucocyte count was significantly higher in malaria infected individuals than normal. The differential leucocyte counting indicates that Neutrophils, Eosinophils and lymphocytes were significantly increased malaria infected individuals than normal.

6.3. Biochemical aspects in serum samples of malarial infected individuals: The results obtained from this study showed the significant increased level of serum protein in the malarial infected individuals when compared with normal. Aspartate amino transferase (AST) and alanine amino transferase (ALT) were found to be higher in the malarial infected individuals than normal. Among the malarial infected individuals, aspartate amino transferase and alanine amino transferase were significantly more in affected males than females. Where as alkaline phosphatase was more in all affected individuals.

PROTEIN PROFILE

6.4. Electrophoretical aspects in serum samples of malarial infected individuals: Several protein bands were observed on 1st, 2nd, 5th, 7th, 14th and 21st day samples, but the 14th day sample was especially under taken in present study, because they formed more numbers of unique bands. Therefore, the slabgel was used for further target studies of protein profile. In this electro blotting method, the 51 kDa protein was
eluted from the gel. The total amount of protein was finally recovered from the gel by protein sequencing and structural analysis.

6.5. Sequencing and structural analysis of 51 kDa protein

*Plasmodium falciparum*: The 51 kDa protein isolated was sequenced and structure was analysed by various computational approaches. Finally structure and sequence of novel protein was detected from *P. falciparum* parasite infected sample using SOPMA, Ramachandran Plot, BLAST and Rasmol Model. The 51 kDa protein was detected as membrane receptor associated protein.

**CONCLUSION**

Malarial cases were found in the coastal areas of Thanjavur, Nagapattinam and Cuddalore districts. Therefore, government should take effective step to control *Anopheles* mosquitoes to eradicate the *P. falciparum* and *P. vivax*.

The protein sequencing and structural analysis of 51 kDa protein of *P. falciparum* indicated that it is a membrane associated receptor protein. It may prove to be essential components of malaria vaccine preparations and to detect the parasite using antibodies. Of public health significance, a better understanding of the molecular mechanisms will facilitate the development of immunogenic vaccine that activates the
immune system to kill the malarial parasite. Thus the present study provides the baseline information to the future researchers involved in the development of vaccines and paves the way for the control of malarial parasites using vaccine.

**Recommendation for further line of research:** At this time, there is no approved vaccine for malaria. However, research scientists all over the world are working on developing an effective vaccine. Because other methods of fighting malaria, including drugs, insecticides, and bed nets, have not succeeded in eliminating the disease, the production for a vaccine is considered one of the most important research aspects for further line of research.