SALIENT FEATURES OF THE PRESENT STUDY

The following are the features emerge out of the present study.

1. The effectiveness of the investigation techniques were well established by identifying the macromolecular interaction between the polymer molecules at 303K.

2. Successfully identified the social relevance problem of hypoglycaemia by identifying the molecular interaction of doxycycline hyclate with human insulin actrapid (exogeneous insulin) at 303, 310 and 313K.

3. The preferential interactions of macromolecule doxycycline hyclate with fatty acids – saturated and unsaturated in non-ionic state were achieved at physiological temperatures 310 and 313K. The possible interacting sites to retain the doxycycline hyclate as non-ionic were discussed, which was the cause for antibiotic resistance and toxicity. The dipolar and dispersive type of interactions that exists between the antibiotic and fatty acids were known.

4. The viscometric parameters obtained in the dilute solution viscometric technique recognized the short range thermodynamical interactions of solute-solute among the antibiotic doxycycline hyclate / insulin and doxycycline hyclate / fatty acids as effective as in polymer system. The conformity of interactions was provided by the thermo acoustic parameters. Through the excess thermo acoustic parameters, dipolar, hydrogen bonding and dispersive type of interactions were identified. The
homogenous and heterogeneous nature of the blend solutions were revealed through refractometric technique. The spectral analysis identified the group that involved in the specific interactions.

5. The structural, chemical and inter-actual similarities between the specific structural macromolecular drugs and the polymers suggested that the techniques that were effective in identifying the specific interactions between the polymers were capable and identified the specific interactions that were reasonable for drug-biomolecule interactions.
Papers published

1. **C. Roumana** and G. Velraj
   Molecular interaction study of antibiotic Doxycycline hyclate with linoleic acid.

2. **C. Roumana**, G. Velraj, P.E. Akilandeswari and M.G. Mohammed Kamil
   Investigation of molecular interactions of antibiotic Doxycycline hyclate with palmitic acid.

3. **C. Roumana**, G. Velraj, M. Roumaisa and M.G. Mohammed Kamil
   Acoustical Investigation of molecular interactions in Aqueous Antibiotic solution.

Communicated

1. **C. Roumana** and G. Velraj
   Molecular interaction studies of antibiotic with unsaturated fatty acid.
   Journal of pure and applied ultrasonics.

2. G. Velraj, **C. Roumana**, P.E. Akilandeswari and M.G. Mohammed Kamil
   Viscometric, ultrasonics, refractometric and FTIR studies of Poly (Methyl methacrylate) / Nitrocellulose blends.
   Journal of applied polymer science.

3. **C. Roumana** and G. Velraj
   Study of molecular interactions of Antibiotic doxycycline hyclate and insulin.
   International journal of pharmaceutics.

List of conferences/seminar/symposium/workshop in which Part of the results presented

In International level

1. **C. Roumana** and G. Velraj
   Investigation of Molecular Interactions of Myristic acid With Antibiotic through Viscometric, Acoustic and Refractometric Studies.
2. **C. Roumana, G. Velraj, P.E. Akilandeswari and M.G. Mohammed Kamil**
   Ultrasonics, Viscometric investigation of antibiotic with saturated acid.
   Pittcon conference & Expo 2010, Orlando florida, **United States America**, February 28th – March 5th 2010.

3. **C. Roumana, G. Velraj, P.E. Akilandeswari and M.G. Mohammed Kamil**
   Investigation of molecular interaction of bio-molecule with antibiotic through viscometric and acoustic Studies. International conference on recent trends in materials and characterization, organized by the Department of Physics, National institute of technology Karnataka, Surathkal, **Mangalore, India**, 14th-15th February 2010.

4. **C. Roumana, G. Velraj, P.E. Akilandeswari and M.G. Mohammed Kamil**

**In National level**

5. **C. Roumana, R. Sudha, G. Velraj, P.E. Akilandeswari and M.G. Mohammed Kamil**
   Investigation of miscibility of the polymer blends in solution, National conference on Recent advances in spectroscopy and electronics, organized by the Department of Physics and Electronics, Muthayammal college of arts and science, Rasipuram, Namakkal Dt, Tamilnadu, India, 5th - 6th February 2010.

6. **C. Roumana, G. Velraj, P.E. Akilandeswari and M.G. Mohammed Kamil**
   Ultrasonic and viscometric investigation of molecular interactions of Doxycycline hyclate with ricinoleic acid. Eighteenth national symposium on Ultrasonics, on Biomedical applications of Ultrasonics, organized by VIT University, Vellore, Tamilnadu, **India**, 21th – 23th December 2009.

7. **G. Velraj, C. Roumana, E. Sukanya**
   Acoustical investigation of antibiotic with cinnamic acid. National conference on advances in Nano materials, Devices and technologies, organized by Department of Physics, Sri Venkateswara Degree College, Kadapa, Andhra, India, 11th- 12th July 2009.
8. **C. Roumana**, G. Velraj, P.E. Akilandeswari and M.G. Mohammed Kamil
Investigation of molecular interactions in antibiotic doxycycline hyclate
with oleic acid by viscosity study.
National seminar on New age materials science, organized by the
Department of Physics, Sri sankara arts and science college, enathur,

9. **C. Roumana**, G. Velraj, M. Roumaisa and M.G. Mohammed Kamil
Acoustical investigation of molecular interaction in antibiotic-cefadroxil
National symposium on acoustics, organized by K. S. Rangasamy College
of technology, Thiruchengodu, Tamilnadu, India, 5th - 7th December
2007.