CHAPTER – VI
CONCLUSION

In the present study, we described the protein profile experimentally by 2D-PAGE and MALDI analysis to understand the stress mechanisms of cocoti sap and wine on *E. coli* Nissle 1917. We isolated one newly expressed protein from cocoti wine treated gel which is not present in both control and cocoti sap treated sample i.e. P21 prophage-derived head-stabilizing protein VG03_ECOL6 (3n1) also called as Head protein gp3. This protein mainly related to the viral life cycle. It helps to attach the viral gene into host. The growth rate was delayed in cocoti wine treated *E. coli* Nissle 1917 when compared to control and cocoti sap treated samples. Stress mechanism induce many proteins are involved in metabolic process, hydrolase activity, lyase activity, quinone binding, phosphotransferase system, carbohydrate metabolism, DNA binding, DNA repair, transferase activity, oxidoreductase, purine metabolism, transcription anti-termination, transcription regulation and other related activities.

We proved that the predicted protein structure quality, resolution, density and error plot values by QMEAN analysis. Based on these results, only two differentially expressed proteins under sap stress showed that the significant results, which were N-acetylglactosamine-specific phosphotransferase enzyme IIB component 1, PTPB1_ECOLI and DinI-like protein Z3305/ECs2939 in prophage CP-933VDIN11_ECO57. In case of wine stress, the differentially expressed proteins were Transcription anti-termination protein RFAH-ECO57 NusA and PUR7-eco24- phosphoribosylamidazole-succinocarboxamide synthase showed significant results. ProtParam analysis indicating that the multiple physico-chemical characters of differentially expressed proteins were differed and compared. The phylogenetic tree represents the relationship in-between the differentially expressed proteins, were showed siblings (related) as well as monophytic clade.

Finally we concluded that *E. coli* Nissle 1917 exhibited low resistance to cocoti sap. Three differentially expressed proteins showed under cocoti wine stress negative effect on human health. P21 prophage-derived head-stabilizing protein VG03_ECOL6 protein helps to attach the viral gene into host, Xanthine dehydrogenase iron sulphur binding subunit XDHC_Eco57 protein chance to cause xanthinuria (respiratory syndrome), may
contribute to adult respiratory syndrome, and may potentiate influenza infection through an oxygen metabolite-dependent mechanism. Small toxic polypeptide LDRA_ECOLi protein under wine stress is influencing on cell-signaling.

In my post-doctoral research, these three differentially expressed proteins 1) P21 prophage-derived head-stabilizing protein VG03_ECOL6 protein, 2) Xanthine dehydrogenase iron sulphur binding subunit XDHC_Eco57 and 3) Small toxic polypeptide LDRA_ECOLi were analysed for drug designing which will be useful for biopharmaceutical industries to prepare the drugs against the toxicity of wine treatment.