











and ProQ were formulated (refer table 1). Subsequently, model 1 was considered the finest model and the values of the covalent bond quality showed a high score of 7.5. But certain values related to the non-covalent bond quality and the torsion angle quality however, showed lower values of about 3.5 and 2.5. This becomes a limitation of the protein modeling of capsule biosynthesis protein capA of *P.gingivalis* and further laborious studies are required to validate the above results and predict the appropriate structure making use of our analysis.

This homology modeling technique is currently the most meticulous and time saving computational method to generate reliable structural models and is frequently used in many biological scenarios. Normally, the computational effort for a modeling project is fairly less and lasts only for a few hours. However, this does not include the time required for visualization, clarification and comprehension of the model, which may vary depending on personal experience working with protein structures.

Thus this study has resulted in the identification of the three dimensional protein model of capsule biosynthesis protein capA of *P.gingivalis* –strain ATCC 33277, which is an extremely good model – a model verified and validated by many tests. This study is only the beginning of an elaborate and extensive research work that must be carried out to aid in the discovery of targeted drugs and other substances that can inactivate the periodontal pathogen at the very germinal stage of evasion of host defences.

#### 4. CONCLUSION

Thus, from the above modeling performed and after being subjected through a series of analysis, MODEL-1 was found to be more accurate when compared to the other models obtained. Thus a validated three dimensional model or a protein structure of the capsule biosynthesis protein cap-A of *P.gingivalis* is obtained through homology modeling. Identifying this protein structure is only the initial step for manifold meticulous time-consuming procedures including identifying and proving the functions of the protein and its pathogenic role in periodontitis and finally targeted drug delivery. Even though targeted drug delivery seems to be one of the premier ways in therapy for

multitudinous diseases, its potential role in periodontal inflammation still remains an unanswered question.

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