Comparative genomics and proteomics analysis of phages infecting multidrug resistant *Escherichia coli* O177 isolated from cattle faeces

Peter Kotsoana Montso^{1,2,*}, Andrew M. Kropinski³, Fortunate Mokoena⁴, Rian Ewald Pierneef^{5,6,7}, Victor Mlambo⁸, Collins Njie Ateba^{1,2}

¹Food Security and Safety Focus Area, Faculty of Natural and Agricultural Sciences, North-West University, Private Bag X2046, Mmabatho 2735, South Africa.

²Department of Microbiology, Faculty of Natural and Agricultural Sciences, North-West University, Private Bag X2046, Mmabatho 2735, South Africa.

³Department Food Science, and Pathobiology, Ontario Veterinary College, University of Guelph, Guelph, ON N1G 2W1, Canada

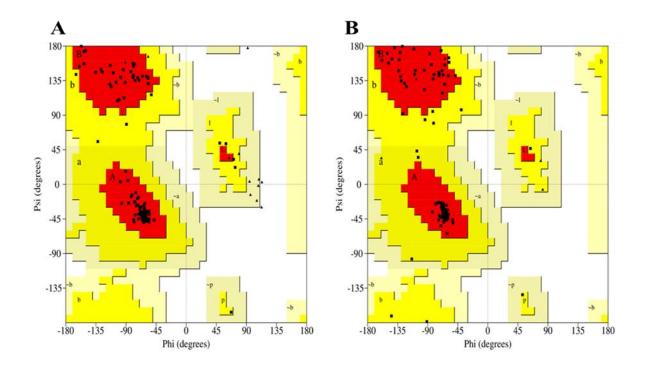
⁴Department of Biochemistry, Faculty of Natural and Agricultural Sciences, North-West University, Mmabatho, South Africa.

⁵Department of Biochemistry, Genetics and Microbiology, University of Pretoria, Pretoria, 0001, South Africa

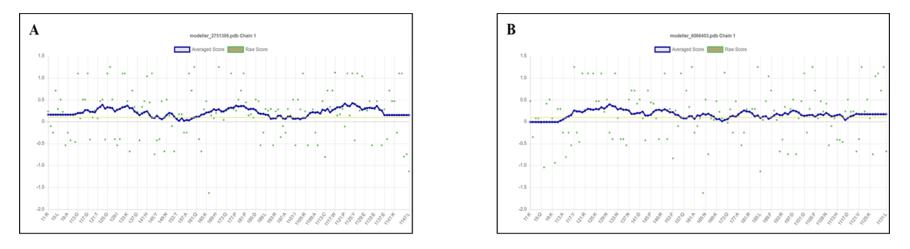
⁶Centre for Bioinformatics and Computational Biology, University of Pretoria, Pretoria, 0001, South Africa

⁷SARChI Chair: Marine Microbiomics, microbiome@UP, Department of Biochemistry, Genetics and Microbiology, University of Pretoria (UP), Hatfield, Pretoria, South Africa
⁸School of Agricultural Sciences, Faculty of Agriculture and Natural Sciences, University of Mpumalanga, Mbombela, 1200, South Africa.

*Correspondence: <u>montsokp@gmail.com</u>

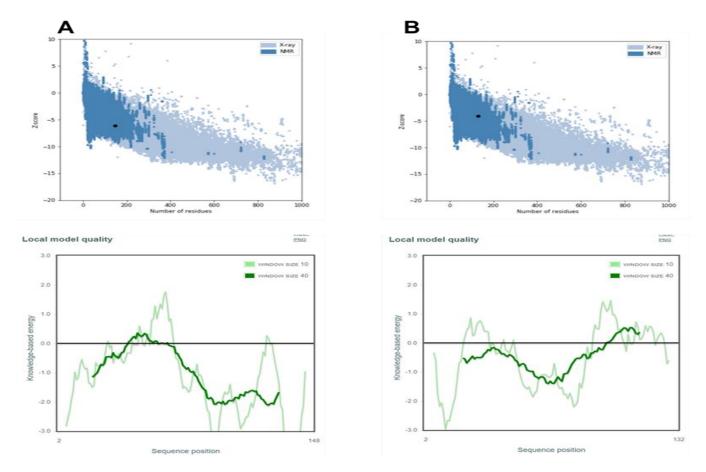


Supplementary Figure 1: Ramachandran plot depicting the phi-psi torsion angles for all the residues of the models (\mathbf{A} = lysozyme, and \mathbf{B} = endolysin proteins) predicted by PROCHECK. Red colour represents the most favoured region while yellow colour represents the allowed region, and white colour represents disallowed region. The A, B, L: Most favoured regions; a, b, l: additional allowed regions; ~a, ~b, ~l, ~p: generously allowed regions.



Supplementary Figure 2: The VERIFY_3D plot showing the models ($\mathbf{A} = 1$ ysozyme, and $\mathbf{B} =$ endolysin proteins). The blue line represents the average score, which is the standard to judge the quality of the structure; it is considered as a high-quality model when more than 80 % of the residues have 3D-D score of higher than 0.2.

The VERIFY_3D plot for.



Supplementary Figure 3: ProSA sever Z-score of the final models ($\mathbf{A} = 1$ ysozyme, $\mathbf{B} =$ endolysin and, $\mathbf{C} =$ tail fiber proteins). The Z-score plots (Upper part) shows the Z-score (black dots). The energy plot (lower part) as computed by PROSA server.