Antibiotic residue, resistance and novel strategy to develop antimicrobial agents

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Different drugs used in livestock production have created a build-up of chemicals in the food chain and the environment. Among different drugs, the use of low levels of antibiotics as growth promoters in animal feeds and indiscriminate use of antibiotics to treat human or animal infections are thought to be the cause of an alarming increase in antibiotic resistance among bacteria. Antibiotic residue in meat, milk and its different processed products and resistant of different microorganism have been posing increasingly serious concern to all involved in veterinary and medical science. These problems are now in high alarming state and scientists across the world are now focusing on alternative antimicrobial agents. Antimicrobial peptides (AMP) are prevalent throughout the nature as a part of the intrinsic defenses of most organisms and provide innate and adaptive immunity. AMP can be used as blueprint for developing novel antimicrobial agents. In order to design the antimicrobial peptides, the most common approach is either to retrieve the required genomic sequences from different databases or to sequence the novel antimicrobial peptide gene. After that prediction of peptide is done from all these sequences to find out the consensus region, specific pattern of amino acid distribution and trace out the mature peptide for synthesis. On the basis of amino acid sequence of AMPs, various analogues can also be prepared by replacing with desired potent amino acid. In the present experiment a number of antimicrobial peptide has been designed on the basis of predicted peptide from the genomic sequences of buffalo (Bubalus bubalis) and synthesized using solid phase Fmoc chemistry. Peptides were evaluated for its antimicrobial activity and minimum inhibitory concentration (MIC). Cyto-toxicity and structural analysis of the synthesized peptides were done using Fluorescent Activated Cell Shorter (FACS) and Circular Dichroism (CD) Spectroplarimeter respectively. Designing and synthesis of antimicrobial peptides represents a promising strategy for the development of a novel antimicrobial agent.

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Unlocking barriers in science communication the case of biotechnology science centers-Kenya

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Biotechnology application is a key to Global development through its utilization to yield products and services. The barrier to adoption of Biotechnology applications and research findings is greatly due to poor communication hence aligned to only the few in science field. This lead to the introduction of science centre concept in Kenya. Publications may not improve citizen’s livelihood without understanding the big science through simplified communication skills. Science centers link scientific research and public and is an important innovation platform which focuses on hands-on, inquiry based learning and has achieved a high trust rate for science communication. Simple exhibits are used at the Biotechnology science centre; DNA extraction in the kitchen; using ground carrots, fruits, leaves, warm salty water, detergent and spirit; mixed and thread like substance observed; DNA rising into the upper spirit layer; changing flower colors by food colors; cell study by orange demonstration; lifesaving skills- fire extinguishers by bi-carbonate and weak acids. School children and the public; youth have enjoyed science as fan due to informal center’s setup.

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