Research Paper

iMedPub Journals
www.imedpub.com

European Journal of Experimental Biology
ISSN 2248-9215

2021
Vol.11 No.2:5

DOI: 11.36648/2248-9215.10.2.126

Upshot of Virulence Markers and Effects of Temperature and Ph on Haemolytic Bacteria in South-West Nigeria

Michael Bayode*

Department of Microbiology, School of Science, Federal University of Technology, P.M.B 704 Akure, Nigeria

*Corresponding author: Michael B, Department of Microbiology, School of Science, Federal University of Technology, P.M.B 704 Akure, Nigeria;

E-mail: bayodemcbay6@gmail.com

Received Date: February 12, 2021; **Accepted Date:** February 26, 2021; **Published Date:** February 28, 2021

Citation: Michael B (2021) Upshot of Virulence Markers and Effects of Temperature and Ph on Haemolytic Bacteria in South-West Nigeria. Eur Exp Biol Vol.11 No. 2:5.

Abstract

Virulence is the extent of pathogenicity displayed by majority of pathogens and yardstick that efficiently distinguishes pathogenic and non-pathogenic organisms. Effects of pH, temperature and incubation period were studied on capsule-positive bacteria isolated from Onyearugbulem stream, Akure. The molecularly identified bacteria were tested for haemolysis using blood agar (5% v/v) and for the presence of capsule using India ink. ß-haemolytic bacteria were subjected to different temperature (15 °C – 60 °C) and pH (6.0 – 9.0) ranges. pH conditions were achieved by the addition of 0.01M NaOH and 0.01M HCl to media before sterilization. The zones of clearance (mm) were measured at 24 h, 48 h and 72 h. Proteus penneri showed the highest haemolytic activity (56mm) at 28 °C after a duration of 72 h. Bacillus cereus showed the highest haemolytic activity (52mm) at pH 8.5, after 72h Dye degradation was optimum at 10 to 12 h at 37 °C which showed the haemolytic bacterial organisms were capsule-positive. The findings in this study revealed that bacteria present in Onyearugbulem stream contained virulent factors with highest activity at ambient temperature (28 °C) which indicate the poor quality of the stream and thereby constitute serious health threat to man and animals.

Keywords: ß-haemolytic bacteria, Capsule, pH, Stream, Temperature

Introduction

Water is one of the most important and most precious natural resources. It is essential in the life of all living organisms from the simplest plant and microorganisms to the most complex living system known as human body (Olajubu and Oguniaka, 2014). Water needs have had serious socio-economic and health influences on urban development in developing countries where population concentration has put serious strains on available resources (Agbabiaka et al., 2012). Human interaction can jeopardize parts of this system in a variety of ways. One principal way is through the runoff of fertilizers or sewage into a water body. Both contain nutrients that plants, algae, and cyanobacteria can use to grow and excessive nutrient amounts can lead to very rapid growth. (Agbabiaka et al., 2012). Several pollutants such as chemicals, sewage and household waste can be discovered in surface water bodies such as lakes, streams etc, but it could be said that microorganisms are the most important pollutant on surface water because they are living organism with the ability to thrive on other forms of pollutants and surface waters provide an environment for the growth and replication of a wide range of microorganisms.

Microbial pollution in aquatic environments is one of the crucial issues with regard to the sanitary state of water bodies used for drinking water supply, recreational activities and harvesting seafood due to a potential contamination by pathogenic bacteria, protozoa or viruses (Aude et al., 2014). Most waterborne pathogens are introduced into drinking-water supplies in human or animal faeces (WHO, 2012) and Escherichia coli is found in high concentration in all mammalian faeces (Pauline et al., 2015), microorganisms can also be introduced into surface water through natural occurrences such as rainfall, the occurrence of erosion also contributes to the introduction of microorganisms into surface water. The kind of microorganisms which can be found in surface water have a wide variety and this is because water provides an environment that is suitable for the growth of several microorganisms excluding the ones which live in the

European Journal of Experimental Biology
ISSN 2248-9215
2020
Vol.10 No.4:4