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## Assessing the microbiological and heavy metal burden in some fresh water and marine fishes in a segment of the bight of bonny, Niger delta area of Nigeria

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The microbiological, physico-chemical and heavy metal burden in fresh water and marine fishes were carried out using standard analytical procedures. Five fin and shell fishes were purchased from fishers at different fishing communities in Akwa Ibom State coastline, Niger Delta Area of Nigeria. Micro-organisms isolated included *Chromobacterium violaceum*, *Salmonella enterica*, *Bacillus subtilis*, *Alcanivorax borkumensis*, *Micrococcus varians*, *Porticoccus hydrocarbonoclasticus*, *Marino bacter*, *Marino monas*, *Cladosporium resinae*, *Penicillium italicum*, *Saccharomyces estuari* and *Candida marina*. The microbiological burdens were  $4.9 (\pm 0.02) \times 10^5$  cfu/ml (fresh water),  $6.4 (\pm 0.03) \times 10^5$  cfu/ml (marine water),  $4.0 (\pm 0.01) \times 10^5$  cfu/g (fresh water sediments) and  $5.2 (\pm 0.02) \times 10^5$  cfu/g (marine sediments). Densities of heterotrophs in the fishes ranged from  $7.0 (\pm 0.04) \times 10^5$  to  $7.8 (\pm 0.03) \times 10^5$  cfu/g (intestine),  $6.4 (\pm 0.02) \times 10^5$  to  $6.9 (\pm 0.10) \times 10^5$  cfu/g (gills) and  $7.1 (\pm 0.04) \times 10^5$  to  $7.8 (\pm 0.03) \times 10^5$  cfu/g (skin) from fresh water fin fishes;  $5.1 (\pm 0.2) \times 10^5$  to  $5.9 (\pm 0.01) \times 10^5$  cfu/g (intestine),  $4.5 (\pm 0.04) \times 10^5$  to  $4.9 (\pm 0.04) \times 10^5$  cfu/g (gills) and  $6.1 (\pm 0.04) \times 10^5$  to  $6.9 (\pm 0.02) \times 10^5$  cfu/g (skin) from fresh water shell fishes;  $7.5 (\pm 0.02) \times 10^5$  to  $8.6 (\pm 0.05) \times 10^5$  cfu/g (intestine),  $7.1 (\pm 0.03) \times 10^5$  to  $7.9 (\pm 0.04) \times 10^5$  cfu/g (gills),  $6.1 (\pm 0.03) \times 10^5$  to  $9.8 (\pm 0.5) \times 10^5$  cfu/g (skin) from marine water fin fishes;  $5.3 (\pm 0.03) \times 10^5$  to  $6.1 (\pm 0.2) \times 10^5$  cfu/g (intestine),  $4.1 (\pm 0.04) \times 10^5$  to  $4.9 (\pm 0.02) \times 10^5$  cfu/g (gills) and  $7.1 (\pm 0.03) \times 10^5$  to  $7.9 (\pm 0.05) \times 10^5$  cfu/g (skin) from marine water shell fishes. Comparable trends in heavy metal concentrations were:  $FE > Cu > Al > Zn > Ni > Pb = Cd$  (fresh water sediments),  $Fe > Al > Ni > Pb > Cd > Cu > Zn$  (marine sediments),  $Cu > Fe > Zn > Al > Pb = Ni = Cd$  (fresh water) and  $Al > Fe > Ni > Cu > Zn > Pb > Cd$  (marine water). Although densities of hydrocarbonclastic micro-organisms  $10^5$  cfu/g and above are considered significant, their presences in high numbers in fishes present some ecological advantage in the event of oil spill as they could metabolize and biodegrade the pollutants in fishes for their survival. Shell and fin fishes are promising candidates in bio-monitoring and as pollution indicators.

### Biography

Alfred Y Itah did his BSc (Hons.) in Microbiology (1983), Calabar, Nigeria and PhD (1987) at Graduate School Board and Senate of the University of Calabar following his excellent performance in MSc course work examinations. He worked as a Professor of Environmental and Public Health Microbiology (2004); Head, Department of Microbiology (2001-2006). He was elected as Dean, Faculty of Science (2008-2010) and re-elected as Dean (UNOPPOSED, 2010-2012). He is a member of 10 learned societies including the Nigerian Society for Microbiology and American Board of Research Advisors. He has more than 51 scientific publications in reputable national and international journals with high impact factor. He is a Consultant Environmental and Public Health Microbiologist (Since 1998) and Litigation Expert Witness on crude oil pollution matters (Since 2000). He has attended more than 22 scientific conferences and is the Editorial Board Member and Editor-in-Chief to some reputable journals in Nigeria.

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