

# ALTERATION OF BACTERIOLOGICAL LOAD QUALITY OF RAINWATER DUE TO ATMOSPHERIC EXPOSURE: AN ALTERNATIVE SYNERGY TO POTABLE WATER DISINFECTION IN REMOTE COMMUNITIES OF NIGER DELTA OF NIGERIA

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**Background:** Rainwater in most developing communities of the globe remains the major source of water for drinking, washing, bathing and cooking purposes but often its portability is not tested and trusted, thus putting the general populace at risk of myriad water-borne illnesses including those from bacteria, virus, parasite and fungi, respectively. However, the growing world population has continued to put the scarcely available water resources at high demand, thus the need to secure the integrity of these very important natural resources cannot be over emphasized given its critical applications and usage in our everyday life and survival on earth.

**Method:** This study was aimed at carrying out bacteriological analyses of rainwater harvested and kept in two different atmospheric conditions within a period of 21 days. Rainwater samples from three different locations (Diobu, Trans-Amadi and Rumuolumeni) within Port Harcourt, Rivers State in Nigeria were harvested directly using pre-sterilized plastic bottles and transported to the laboratory for bacteriological analysis.

**Result:** Sample A, which was the pre-exposed sample from Diobu had the highest mean bacterial load of  $153 \times 10^3$  cfu/ml; sample C from Rumuolumeni which was kept in a dark room for 21 days had a mean bacterial load of  $115 \times 10^3$  cfu/ml, while sample B from Trans-Amadi which was exposed to sunlight for 21 days had the lowest mean bacterial load of  $29 \times 10^2$  cfu/ml.

**Conclusion:** The results show the presence of bacterial load in the sampled rainwater, and as such, contamination of rainwater can be reduced by varying the atmospheric condition by exposing it to sunlight for some period over time. Nevertheless, increasing the temperature of stored rainwater and any other water sample can help to reduce the number of microorganisms present as most of them are mesophiles and as such, cannot survive in environments with high temperature. It is therefore strongly suggested that this could be an alternative means of water purification and treatment, especially in the rural communities of low income settings with huge visible lack of infrastructure and basic scientific technology for water disinfection option. However, the routine application of the above approach could massively reduce the increasing trend of water wash, water base and water borne infection among rural inhabitants, especially when they are used in synergy with other treatment options like ultrasound and chlorination in a reduced quantity.

## Biography

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