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**EFFECT OF WATER QUALITY ON THE BREEDING AND
GROWTH OF *Aedes aegypti* (INSECTA : CULICIDAE)**

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DEDICATION

THIS WORK IS DEDICATED TO MY LOVING SHEPHERD
THE LORD JESUS CHRIST WHO ALONE
IS WORTHY TO BE PRAISED

MAY EACH DISCOVERY IN SCIENCE
BE A STEP CLOSER
TO POINT US TO YOU, THE CREATOR
WHO IN YOUR INFINITE WISDOM
HAS INDEED MADE ALL THINGS WELL

GENESIS 1 : 31

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ABSTRACT

A laboratory study was conducted to determine the egg, larval and pupa survival of *Aedes aegypti* in rain water, river water and stagnant (pool) water. Mosquito survival was then evaluated with respect to water quality, namely, pH, suspended solids, rate of filtration and concentrations of trace and heavy metals. Principal component analysis of the water parameters characterised the rain water as having a higher concentration of Zn; river water as having higher concentrations of Mn, Fe and Mg; and stagnant water with generally higher concentrations of Co, Cr and Sn. The survival of egg into the first instar larva was high (78%-100%) in all the freshwater sources. Larval survival was lowest in stagnant water collected from ditches (48%). Pupal survival was also lowest in stagnant water, particularly water collected from a drain (40%). Rain water collected from the city did not appear to be conducive for pupal survival (56%). Correlation analysis of water quality parameters and mortality rates of *A. aegypti* showed significant correlations ($p < 0.05$) between mortality at the egg phase and the concentration of arsenic ($r=0.62$); mortality at larval phase and the concentration of stanum ($r=0.53$); and mortality at pupal phase and the concentrations of cadmium ($r=0.58$), cobalt ($r=0.54$) and chromium ($r=0.58$).