BACTERIOLOGICAL STUDIES OF HOUSE HOLD WATER RESERVOIRS IN CAIRO

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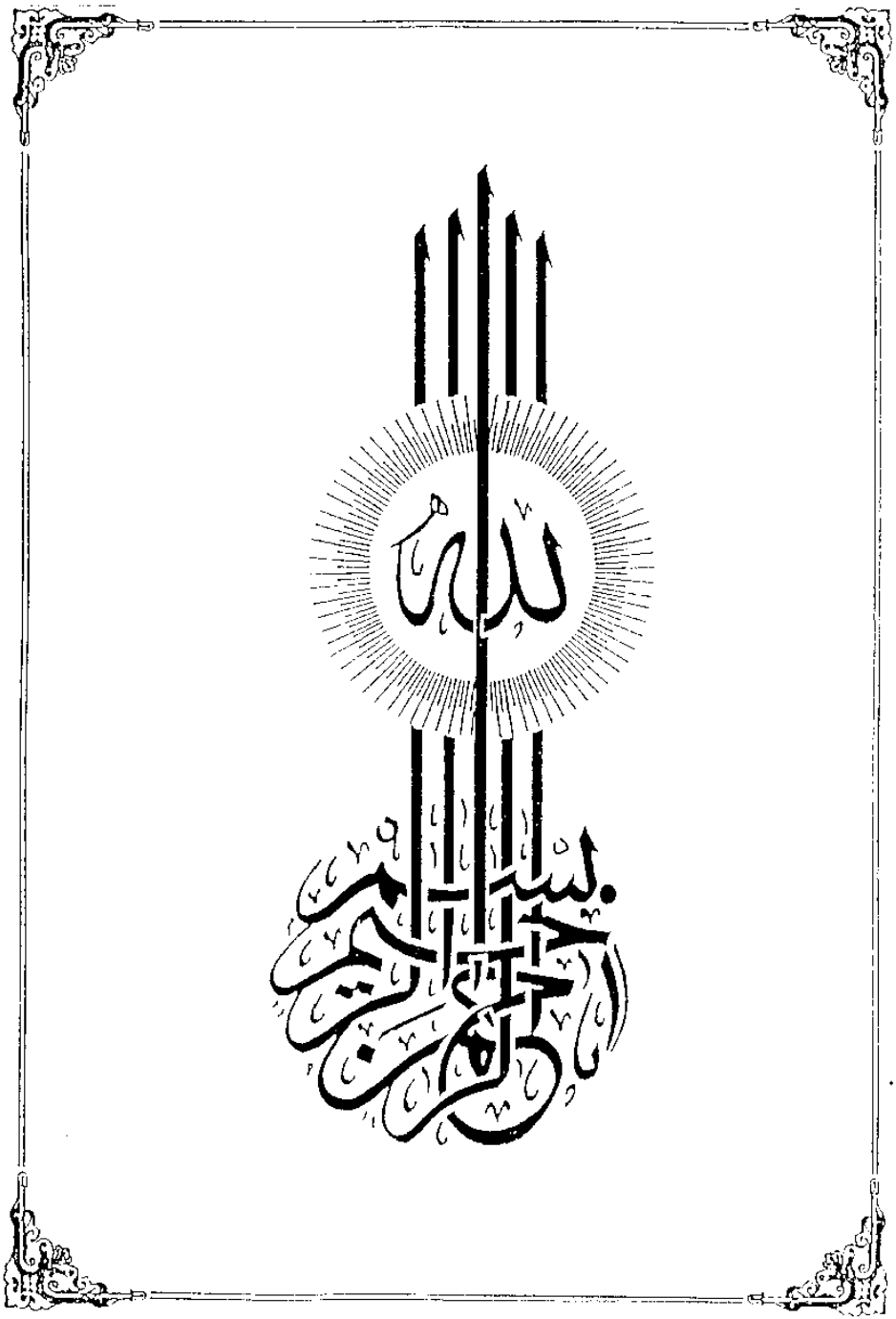

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DEDICATED TO MY

FATHER , MOTHER, MY FAMILY AND MY HUSBAND

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THIS THESIS HAS NOT BEEN
PREVIOUSLY SUBMITTED - FOR ANY
DEGREE - TO
THIS OR TO ANY OTHER
UNIVERSITY

Signed

Soad Ahmed Abdallah

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PREFACE

PREFACE

Water is one of the most essential constituents of the human environment. Man needs it for his physiological existence and for many other purposes. It is the key factor in human health and well being. and without it there would be no life of any kind on earth, therefore .the provision of safe and adequate water supply for all communities is an important function in maintaining public health and in reducing diseases.

Water in its pure form occurs rarely in nature. So that, all drinking water require treatment for one or more of the following reasons:

1. To remedy pollution, that is the removal of colour, taste, odour, suspended matters, organic matters and bacteria.
2. to remove dissolved minerals for example, calcium and magnesium (softening), iron and manganese.
3. To neutralize acidity and correct corrosive activity and plumbosolvency.

Campbell (1959) estimated that each year some 500 million people world wide were affected by in capacitating water borne or water borne or water associated diseases and that 10 million of these died. It is unlikely that today, as we enter the third year of the International Drinking Water Supply and Sanitation Decade,

the situation is greatly different. Indeed, a recent estimate by **Witt (1982),** based on **(WHO, 1970,71 and 76)** reports, suggests that 80% of all human illness in the developing countries is associated with polluted water, and that most of these illnesses are caused by biological contamination.

One of the most important water treatments from the point of view of hygienic safety is to eliminate pathogenic microorganisms. The indication of microbiological pollution is based on the detection of faecal contamination from man or other warm blooded animals. Organisms used as bacterial indicators of faecal pollution include the coliform group especially Escherichia coli, Streptococcus faecalis, Pseudomonas aeruginosa and Clostridium perfringens.

In the developing countries 80% of all infections is attributable to inadequate water or sanitation, which includes the effects of drinking contaminated water. Water acts as a breading ground for vectors of disease. It is shocking to know, that most of the people, now dying in the developing countries are children and half of all the deaths are among the children under five years.

WHO (1971) reported that water intended for human consumption must be free from organisms and from excessive chemical substances that may be hazardous to health, for this reason, the Egyptian government nowadays gives a great attention to cover most of the country with potable safe water. The main source of natural water in Egypt is the River Nile and its tributaries which

feed all water treatment plant distributed in different localities. The other source is the under ground water (wells). Springs are used to cover the great demands of water in the Egyptian oeses.

In Cairo governorate, up-roof water reservoirs are used in most of the high buildings. The potability of water in these reservoirs is not normally suitable due to pollution. For these reservoirs to be used as a source of water supply, some precautions must be taken into consideration. These include tight covers and periodic monthly maintainance. Most of these up-roof water reservoirs have little or ignorant attentions.

The main portals of entry for microbes to these reservoirs include droppings of dust, birds, rudents, cats as well as algal growth.

The aim of the present investigation is to examinethe suitability of this type of water for human consumption.

INTRODUCTION

INTRODUCTION

The importance of water in human welfare can not be over-emphasized. Man actually consumes an average of approximately three pints of water, as such, daily, and two additional pints are utilized in the form of milk, water in foods, and water formed in the body.

For domestic purposes, waters may be divided into two major categories, namely, fresh waters and salt or sea waters, which have a high content of sodium chloride and other salts. The continental supplies of fresh waters are constant by being diminished by drainage from land into the sea and by continuous evaporation from the earth's surface. These losses are compensated for through the condensation of water vapour and its precipitation in the forms of rain, snow, hail, dew, frost **(Gainey and Lord, 1976).** From the point of view of accessibility for domestic and industrial purposes waters may be grouped into four major categories **(Gainey and Lord, 1976):**

Group I - Waters requiring no treatment:

This group includes primarly ground water which has no possibility for pollution and meeting the requirements of the U.S. Public Health Service Drinking Water Standards, as investigated by regular and frequent sanitary and laboratory tests for purity.