SUMMARY

Water intended for human consumption should not contain pathogenic organisms, as serious ill health can be caused by water supplies when becoming contaminated from faeces being passed to it.

Bacteriological standards of water Quality require that water leaving treatment work, service reservoirs and water towers must be free from coliform organisms, pathogenic organisms and opportunstic pathogens (e. g Aeromonas.)

The presence of such pathogens in water indicate water quality deterioration which usually occur in distributing system before reaching the customer's tap and it is permissible for only 95% or more of annual samples to be free from coliforms.

The aim the of present work was to study the presence of such pathogens (Coliform group, pathogenic organisms transmitted by water and *Aeromonas)* in drinking water in urban and rural areas of Qualubia governorate. This was achieved by bacteriological examination of water samples from different sources. In addition the virulance of some selected isolated organisms in cell line tissue culture was studied.

In this work both chlorinated and unchlorinated water samples were tested, the chlorinated water samples were collected from Benha city, four samples from the main treatment plant, thirteen samples from reservoirs above some buildings and, twenty three samples from public taps. The unchlorinated water samples (underground water) were

collected from seven rural villages (Damlo, Warwara, Degwa, Bata, Sandanhor, Mit-El-Atar and Kafr Saad) as follow; five samples from storage tanks (El-Sahreig), twenty five samples from rural public taps and thirty samples from rural hand pumps.

All collected water samples were bacteriologically analysed for determination of:

1) bacterial indicators:

A- Faecal *E. Coli* using multiple tube frementation technique (MPN). Eijkman test and citrate utilization test were done to ascertain whether coliform bacilli were typical or atypical.

B- *Faecal streptcocci* using Na azide media.

C- *Clostridium perfringens* using litmus milk acidifcation test (stromy clot).

2- Pathogenic organisms *Salmonella, Shigella and vibrios* using specific selective media for each organism.

3- 40 water samples out of all collected samples (100) from Benha City and the 7 rural villages were randomly chosen and bacteriologically tested for detection of *Aeromonas* as follow: twenty samples from rural hand pumps, ten samples from reservoirs, five samples from public taps in rural villages, five samples from taps in Benha. Membran filteration technique was used for isolation of *Aeromonas* from each water sample.

Twelve *E. coli* strains, six *S. faecalis* strain and one strain of *salmonella para typhi B* were isolated from the examined samples, eight *E. coli* strains out of the twelve strains were isolated from rural hand pumps and the other four strains from rural taps.

The twelve *E. coli* strain, were tested for its virulance by detection of their cytotoxicity in monolayer vero cell line. Seven *E. coli* strains out of the twelve were found to produce cytotoxic effect in vero cell line.