

Summary

The bacterial species *Shigella flexneri*, *Eschirechia coli* and *Salmonella typhi*, were isolated and identified to the level of species from stool samples of patients suffering from diarrhea in central pediatric hospital and central Health laboratory in Baghdad by using enrichment and differential culture media, Api 20 E System, and biochemical & serological tests.

The following Protozoa were isolated and identified to the level of species from Tigris river water samples in Baghdad by using direct and poly urethan foam (PUF) methods and then enriched by adding natural culture media, *paramecium caudatum*, *Euplotes spp.*, *Tetrahymena pyriformis*, *Colpoda culcullus*, *Cyclidium spp.*, *Halteria grandinella*, and Hetero trophic nano flagellate (HNF) .

Pure cultures of each protozoa with one species of the above mentioned bacterial species were used in study of the cultural characteristics of protozoa.

Mixed cultures of each protozoa and two types of bacterial mixtures (*E.coli* + *Salmonella typhi*), (*E.coli* + *Shigella flexneri*) were also used for the same propose.

Results showed that (HNF) had highest duplication rate (>10time/day) in both types of cultures (pure & mixed), followed by *Tetrahymena pyriformis*, *Colpoda culcullus*, *Cyclidium spp.*, *Paramecium caudatum*, *Euplotes spp.*, *Halteria grandinella* respectively.

Results also showed that *Paramecium caudatum* has the highest rate of ingestion in both types of cultures (26×10^3 bacteria/ organism /hr) in pure suspension of *Salmonella typhi*.

The ciliate *Colpoda culcullus*, yeilded the shortest time (21 hr) required for reducion of 90% (T 90) of bacterial numbers in both types cultures, whereas *Paramecium caudatum* yielded the longest time (T 90) in pure suspension of *Salmonella typhi*, followed by *Euplotes spp.* in mixed culture of (*E.coli* + *Salmonella typhi*) .

The highest clearance rate was observed in *Paramecium caudatum* cultures (10 –96.4) nanoliter /organism /hr, while the fewest rate was seen in HNF (0.007-0.04) nanoliter /organism /hr.

The percentages of net protozoal grazing rates (which measured after 72 hr.) were differed greatly in the same organism in both cultures, the highest net grazing percentage was observed in mixed and pure Colpoda's cultures (80%-99.1%) while lowest percentage seen with *Paramecium caudatum* (22%-49%)

The selectivity index values were very low that refers to weak protozoal selectivity toward these bacteria.