Example of research paper on coliform bacteria and their effects

Environment, Animals

Introduction:

Coliform Bacteria are gram-negative non-spore forming and round shape bacteria. Coliform Bacteria grow in moist conditions and easily found in water, vegetables and excreta of animals, mammals and birds. Coliform bacteria are easily available and ferment lactose at the temperature of 35-37 degree centigrade along with formation of gas and acid. Normally bacteria is not very harmful and do not cause for any major illness but their presence at any place is an indication of presence of other pathogens. If Coliform is present with water and food it reflect the quality of water and food.

Various genera are:

Total Coliform Bacteria:

Total Coliform bacteria are present in water, moist soil and excreta of animal. The bacteria are usually harmless and if present with water indicate the presence of other pathogens. Bacteria belonging to this group are; Citrobacter, Enterobacter, Hafnia, Klebsiella and Serratia. Fecal Coliform Bacteria is also sub-group of total Coliform bacteria.

Fecal Coliform:

Bacteria is gram-negative, facultative anaerobic, rod shaped, and non sporulating. At temperature of around 44 degree centigrade bacteria produce lactose. Bacteria easily grow in bile salts and they are oxidase negative. They are found in intestine of mammals and animals. Escheria coli is genre of fecal bacteria and sub-genre of Coliform bacteria.

Escheria Coli:

Commonly known as E. Coli bacteria. It is gram-negative and rod-shaped. E coli bacteria are also found in intestine of human, animal and birds. Most of E. coli is not harmful for its host. The effect caused by bacteria is not long lasting and can be controlled with in limited time. Some un-harmful bacteria generate vitamin K2 and hinder the growth of other pathogens in host body by this way it is beneficial for its host. Certain serotype of E. coli may cause to some illness like food poisoning and product recalls. Few e. coli are also responsible for blood diarrhea and lead to kidney failure.

E. coli do not survive in open environment or long time. Their reproduction and growth does not sustain outside the host body. E. coli is exception in its group of Coliform Bacteria other bacteria does not reflect the same and survive in open environment. E. coli is very important in the field of Bio-science and widely studied bacteria. E. coli reflect maximum growth at 37 degree centigrade temperature.

Identification process of Coliform bacteria is much easier then identification of any other bacteria or virus. Generally the sources of all bacteria are same. Pathogens enter in human body by water, food items and mosquitoes. Hence identification of Coliform bacteria in human body gives indication that other pathogens are also present.

Sources of Coliform bacteria:

Water and food Items are major ways by which bacteria enter into human.

Potential water sources of Coliform bacteria are:

Presence of bacteria in water indicates that human or animal waste is mixing

up with water. Coliform bacteria can get mix with large open sources of water like rivers, ponds and open tanks through various sources like; excreta of animal and birds, soil storm and human sewage. They may also come through plants, pulp and paper.

Human Sewage – failure of septic system allow Coliform bacteria to get mix with water through drainage system, aquifers, and any near by open water reserve. In many developing countries people still using drinking water from open reserve of water. Some industries also have common system to handle sewage water as well as waste water. During monsoon season sewage water system start over flooded and extra water went out of the system and get mixed with other water sources.

The problem mainly found in underdeveloped areas where sewage and water systems are not closed. In developed areas both system are completely separate and closed.

The problem can occur if any damage happened to water pipe lines or sewage pipe lines. A damaged water line allows waste material to get directly enter in to water system. This type of damage could be very serious and dangerous as it will spread bacteria to huge number of people.

Animals - Animal contribution in spreading Coliform bacteria is unavoidable. All type of animals including pets like dog, cat, cow, buffalo and horses infect the water with their excreta. Animal’s moves in all the areas including sewer area and carry waste. Whenever they pass any water body the waste they are carrying get dissolved in water. Birds can directly infect the water of rivers, ponds and open tanks through their excreta.

Agriculture – livestock grazing is common practice in agriculture. Farmers

allow livestock to graze near water bodies which resulted in spreading bacteria through livestock dung or through waste material they carry in their foot. Farmers spread fertilizer in their land, use waste material sludge and some times allow livestock to go into nearby water reserve. All these practices allow waste material to get mix with water and spread Coliform bacteria.

Food Material as sources of Coliform bacteria:

Fruits and vegetables play very major role in spreading Coliform bacteria. Fruits and vegetables carry some particles of moist soil with them. If people eat fruits and vegetables without proper washing and boiling bacteria go inside the human body. These bacteria cab be killed at certain temperature so people should not eat them without proper wash and boiling.

Effects and consequences:

Escherichia coli also known as E. coli are a bacterium species. This parasite makes its home in the stomach and intestines of living creatures. Normally E. coli gets entry into bodies through unhygienic water or food. The other modes of transmission take place, when a fly or other infected insect bites a person or animal. Gastrointestinal illness is a normal health problem that appears after the intrusion of this bacterium in the body of a creature.

Effects of Escherichia Coli:

E. coli are a harmful species of bacterium and there are many deadly effects of this species of bacterium. Once E. coli bacterium enters into body, it starts creating several problems and if not paid attention or treated immediately,

the problem may aggravate further and create some serious threats to the health and life. Several researches show that this bacterium can enter into blood and cause some severe health problems. Beef and contaminated food are some favorite shelters of E. coli. Some of the effects of E. coli are as follows:-

a. Diarrhea- E. coli after entering into the intestinal parts of the body, attacks the internal parts, secret some toxics and it causes the diarrhea. E. coli is one of the most common causes of the boldly diarrhea and its soft targets are children and old people. Once attacked, the disease may surface after five to seven days and the effects may last for a couple of days. It dehydrates the body and body becomes absolutely tired. In the beginning water diarrhea starts and later on the same turns into bloody diarrhea. The disease makes the body absolutely weak and in some cases, blood may be required to the body as the loss of blood may cause anemia. In the case of diarrhea, the patient should immediately approach the doctor and get the medial assistance without any delay.

b. Kidney failure – another hazard that E. coli creates to the health is the severe kidney problem. E. coli secrets the toxics that affects the function of urinating and since the function is related to the kidneys, there is a grave threat in future to these kidneys. The soft targets are again the children and E. coli is the biggest cause of the kidney problems in children.

c. Neurological damage – this bacteria affects the neurological system of the body and due to its several attacks the system gets severely affected. In some cases, it has been observed that it is one major cause of damage of neurological system of the body. E. coli attacks the neurological system and

seizes it which may cause the damaging of the neurological system and further may cause a person to go into coma.

d. Gastro intestinal diseases – E. coli causes the problem of gastro intestinal in the body of humans and animals. It is a major reason of the internal stones and further it may help in developing the bowel syndrome in the body which is itself a major, painful and chronic disease.

e. Diabetes- due to certain chemical and biological changes, caused by this bacterium in the body of humans, the problem of diabetes arises and may last for a longer period. Diabetes creates several other problems for the health of a human being.

Precaution and Prevention:

Several researches by the doctors and health experts show that E. coli is alone responsible for five to six percent of children deaths and also affects the overall health scenario, very negatively. Some of the problems created by this bacterium are long lasting and once a person affected may carry the effects for the rest of life. The experts harangue that precaution is the best way to prevent the E. coli and the negative effects caused by it. People should avoid using the food that has even the remote chances of contamination. Only purified Water should be used and meat and beef should be consumed only if it is well cooked.

Diagnosis of the E. coli at the early stage may help the doctors to treat the negative effects of E. coli and prevent it from spreading further. Blood and stool test is done to trace the bacterium in a human body and once tested

and traced; doctors proceed further and treat the patients according to the ailment.

Conclusion:

After analyzing several aspects of the e. coli and its effects on human body as well as on the animals, it is clear that the bacterium is very dangerous for the human beings and animals. Apart from the direct impact on the health of human beings, it also creates the hazards to health, indirectly. The E. coli affects the environment and affects the environment badly and makes imbalances in the environment. E. coli is a major threat to the human beings, animals and environment and if not traced and cured on time, it may be deadly for everybody and can imbalance the whole life cycle.

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