Bacteria Isolation

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BACTERIA ISOLATION

Bacteria isolation refers to a process of extracting strains from their surroundings to obtain the required microbe. During microbes identification, pure bacterial culture must be obtained through isolation (Starr et al., 2013). Bacteria are identified through microbiological methods such as gram staining, metabolic processes, and morphology. Bacterial isolation must be cultured in the laboratory since it requires optimum nutrients, temperature, and oxygen supply. Therefore, isolation is determined by whether the individual bacteria are disconnected from other bacteria, thus acquiring appropriate space on the nutrient surface to produce a discrete mound of cells known as a colony. This is because isolate colonies only contain single species, thus easy identification of the microbes. In addition, for effective isolation, only a small number of the cells are needed to be inoculated on a large area of the medium.

However, bacteria are typically extracted during infections from tissues of an organism that may harbor the disease-causing bacteria. They are isolated during disease diagnosis since it helps a pathogen from the patient (Begum et al., 2017). It may also be used to identify microbial contaminants in the food industry in case of occurrence of food spoilage. Isolation of bacterial requires several materials such as Petri dishes and inoculating tools. There are three major bacterial isolation techniques: steak plate, spread plate, and loop dilution method.

The streak plate method is a commonly used bacteria isolation technique (Sanders, 2012). It involves pouring a sterile medium into a petri dish, and it is allowed to cool and solidify. Later, small drops of a sample are spread over the surface of the medium using an inoculating loop. It is applied in the form that mostly thins out the samples and divides the cells spatially over various parts of the plate, ensuring that one-third of the medium is covered. The bacteria will be

identified on the surface of the medium covered by the sample. This method is widely used since it is easy and effective.

The spread plate technique involves diluting the sample until the suspension contains a few bacteria (Sanders, 2012). Liquid agar medium is poured into the plate, and it is cooled at 45 degrees. Afterward, a small amount of diluted sample is pipetted onto the surface of the medium and spread around evenly by use of a sterile spread loop. A sample is spread over different areas on the surface of the medium to facilitate the formation of individual colonies after the agar solidifies.

The pour plate method, also known as loop dilution, isolates bacteria that cannot be separated by plating (Sanders, 2012). The sample is inoculated with a loop into a sequence of cooling tubes inform of liquid agar to enhance the dilution of the number of cells in each tube in the chain. The sample from each inoculated tube is then poured into a different sterile petri dish, cooled, and allowed to solidify. There is a decrease in the number of cells in each inoculated tube for the cells to acquire enough space and for divided colonies in each plate. However, some of the colonies grow on the surface of the medium while others in the medium itself.

Currently, bacteria isolation plays a vital role in our day-to-day life. The medical sector helps have ease disease treatment since it has made it easy to identify pathogens invading the patient. Also, the isolation of clones has contributed to the development of recombinant DNA technology worldwide.

Reference

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