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Culture-Based Techniques for Clinical Pathology

Margaret S Brandwein Gensler *

Department of Pathology, The University of Alabama, Tuscaloosa, AL 35487, USA

Introduction

Depending on the cell type, a monolayer (attached to a surface) or suspension (floating) culture technique may be used. Since bone marrow blood cells develop in suspension, sample cells can be aliquoted right into the proper growth medium. In contrast to lymphocytes, which need 3 to 4 days in culture for the highest yield, bone marrow is commonly cultured for 24 to 48 hours. Furthermore, a mitogen, typically phytohemagglutinin, is required to promote lymphocyte division because they generally do not divide in culture. A mitotic inhibitor like colcemid can then be used to harvest the resulting metaphase cells. All three types of tissue—chorionic villi, solid tissue amniotic fluid cells—grow in situ as a monolayer [1].

Description

After gently decomposing the tissue chorionic villi with collagenase, the individual cells are sown onto glass coverslips, coated with culture media, or put into culture flasks. Centrifugation is required to separate the cells from the amniotic fluid sample before plating the cells in plates or flasks allowing them to develop into in situ colonies. For chorionic villi amniocytes, the typical culture times range from 5 to 7 days, while solid tissue cultures might last up to 2 weeks [2].

Given the recent global spread of aquaculture the international trade in aquatic ornamental species, culture techniques for preserving monogenean monocultures are becoming more important. Furthermore, parasite cultures allow for deeper investigation of more general scientific issues relating to ecology, evolutionary biology the effects of climate change on host-parasite dynamics. Aquatic parasite cultures offer enough organisms to replicate properly for practical ecological studies. Monogenean cultures of aquatic parasites in particular should be advanced future research should look into the viability validity of in vivo cultures that do not depend on or maintain host species [3].

This cell culture method is easy inexpensive. The cells can be easily kept alive in cell culture media. The 2D cell line can be immortalised, allowing it to regenerate repeatedly. Because the culture methodology is straightforward, the results from this technique are repeatable simple to interpret. Additionally, this method aids in the research of cell division, shape structure. The determination of the physiology biochemistry of cells using the 2D cell culture approach aids in our understanding of how organs tissues operate. For instance, it is simple to investigate the physiology, molecular biology biochemistry of primordial cells since they resemble the parental cells from organs tissues.

In petri dishes of various diameters with a thin coating of agar-based growth media, microbiological cultures can be cultivated. Once the required bacteria have been added to the growth medium in the petri dish, the plates are incubated at the ideal temperature for the growth of the chosen bacteria (for example, usually at 37 degrees Celsius, or the human body temperature, for cultures from humans or animals, or lower for environmental cultures). Agar plates can be kept bacteria for upcoming studies by storing them upside down in a refrigerator after the required level of growth is reached.

Before being placed onto a plate given time to set, agar can have a number of additives added to it. Certain chemicals are necessary for certain bacteria to flourish. This can also be done when making bacterial strains with a gene for antibiotic resistance. Only bacteria with the gene insert imparting resistance will be able to thrive when the chosen antibiotic is administered to the agar. This enables the researcher to pick only the successfully changed colonies.

The isolation of pure cultures for single-celled eukaryotes like yeast employs the same methods as for bacterial cultures. Picking choosing a single person to start a culture makes it easier to isolate pure multicellular organism cultures. For example, this method is helpful for the pure cultivation of mushrooms, multicellular algae tiny metazoa. [4,5].

Conclusion

The observation of the specimen in issue requires the development of pure culture procedures. Preparing a streak plate is the most typical way to isolate individual cells create a pure culture. The streak plate method uses an inoculating loop to move the inoculate back forth over the solid agar plate in order to physically divide the microbial population. Colonies emerge after incubation.

Despite the enormous growth in molecular testing, culture techniques are still crucial for identifying infectious diseases because pathogenic organisms that cause disease must be distinguished from other organisms in mixed cultures the relative abundance of one organism in the culture compared to other organisms is helpful for determining the likelihood that an organism is causing disease. Molecular methods are not currently able to replace this knowledge. Numerous organisms can grow on enriched nonselective media, such as blood agar, chocolate agar thioglycollate broth. One group of organisms are encouraged to grow by selective media while other organisms are inhibited.

***Address for Correspondence:** Margaret S Brandwein Gensler, Department of Pathology, The University of Alabama, Tuscaloosa, AL 35487, USA, E-mail: margaretgensler@gmail.com*

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Conflict of Interest

There are no conflicts of interest by author.

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