Bacteria in yoghurt

Posted by Anonymous on Fri, 2019-04-05 16:56

Bacteria in yoghurt: Are yoghurt strains of bacteria suitable for use in schools? Are they safe to use in the biology practical “What causes Yogurtness”?

Voting:

No votes yet

Year Level:
Senior Secondary
Laboratory Technicians:
Laboratory Technicians

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Biology Practical: Bacteria in yoghurt

Submitted by sat on 05 April 2019

When conducting a microbiology activity, it is important to consider what microorganism is being used and how it is being used.

The type of bacteria used in the production of yoghurt are suitable for human consumption. They are not human pathogens, so are suitable for use in schools.

When considering a certain microbiology activity it is important to evaluate:

- The actual activities that will be conducted
- the types of manipulations being performed
- the level of staff training in microbiological techniques

Science ASSIST has produced “GUIDELINES for best practice for microbiology in Australian schools” see https://assist.asta.edu.au/resource/4196/guidelines-best-practice-microbiology-australian-schools. We recommend that your school is familiar with the content of this guide before contemplating the delivery of practical activities in microbiology. In particular, see chapter 3 and 4 regarding risk assessment; school work levels; staff training and microbiology rules. From page 13:

“Before schools embark on working with microorganisms they should ask the following questions and perform a site-specific biological risk assessment.

- *What microorganism is being used? Is it a Risk Group 1 microorganism?*
- *Do the school facilities comply with the requirements of Physical Containment Level 1 laboratories?*
- *Does the school have the necessary equipment for sterilisation and decontamination procedures?*
- *Does the staff have training in microbiological skills?*
- *What manipulations are being performed with the microorganism? Are methods being used to eliminate or minimise exposure to potentially infectious material via aerosols, splashes, ingestion, absorption and accidental inoculation?*
- *Are any staff or students wishing to participate in microbiological activities immunocompromised or immunosuppressed (include those who are pregnant or may become pregnant, or are living with or caring for an immunocompromised individual)? These individuals are more prone to infections and they should consult a doctor to determine whether their participation is appropriate.”*[1]

The Bio-Rad kit activity that you mentioned[2], involves advanced work in subculturing and manipulations of bacteria. This would be considered a Science ASSIST level 4 activity with medium to high risk and therefore staff should be highly trained in microbiology and the manipulations required.

There are a number of procedures used in this kit which are not recommended for schools

- Streaking plates from milk and yoghurt would be ok, but **agar plates should not be incubated at 37°C** as this increases the likelihood of growing human pathogens
- **Agar plates, which have been inoculated by students, should not be opened** as there is a high risk of contamination with unknown microorganisms and therefore a high risk of exposure to possible pathogens. The plates should remain sealed whilst being examined by students and then sterilised in an autoclave before disposal.
- This means that agar plates which have been inoculated by the students:
    - **Must not be opened in order to sample the culture to create a smear to view under the microscope**
    - **Must not be opened in order to subculture from this plate (to inoculate a further agar plate or broth)**
- The use of ampicillin could cause adverse reactions in anyone who may have an allergy

to penicillin

It is important to be aware of the safety issues and risks regarding the microbiological aspects of this and other microbiology kits and to confirm if the required techniques and procedures are allowed in your school jurisdiction. You could also consult with a Workplace Health and Safety Advisor in your jurisdiction for further advice.

We recommend that you consider an alternate activity. We have a range of activities which are suitable for use in schools in our GUIDELINES for best practice for microbiology in Australian schools

We have previously answered the following related questions, which can be viewed on our website:

Genetic modification of bacteria

Using *E. coli* bacteria in schools

Gene induction experiment?

Transformation of E.coli with pFluoroGreen

References and further reading

[1] Science ASSIST. 2017. *GUIDELINES for best practice for microbiology in Australian schools,* Science ASSIST website, https://assist.asta.edu.au/resource/4196/guidelines-best-practice-microbiology-australian-schools.

[2] Bio-Rad Explorer. Nd. *Microbes and Health Kit: "What Causes Yogurtness?"*, Bio-Rad website, http://www.bio-rad.com/webroot/web/pdf/lse/literature/1665031A.pdf (Accessed March 2019)

'Yogurt Production', Milk Facts website, http://www.milkfacts.info/Milk%20Processing/Yogurt%20Production.htm (Accessed March 2019)

'Yoghurt', Dairy Food Safety website, http://www.dairysafe.vic.gov.au/consumers/dairy-foods/yoghurt (Accessed March 2019)
