MANNITOL SALT: Use of Mannitol and Salt Resistance

This medium has a 2-fold purpose---salt resistance and mannitol sugar use. There is 7.5% NaCl in this medium, way higher than normal medium (about 0.5% NaCl), so any organism that grows will be halophilic: either it actually "needs" the salt to grow or it is just tolerant of high salt. The main nutrient in the medium is mannitol sugar, with the pH indicator phenol red (red-orange color at neutral pH). As the mannitol sugar is used and acid by-product is produced, the pH of the media around the colonies is lowered, causing the indicator to turn yellow. Both reactions, salt resistance and mannitol use, are reported.

OBJECTIVES:

Differentiate between mannitol sugar use and non-use.
Identify salt resistance.

MATERIALS NEEDED:

1 mannitol salt agar per table

THE PROCEDURE:

1. Each table has an unknown bacterium.
2. Pick up one mannitol salt agar plate.
3. Inoculate the organism on the plate---either a straight line or a zig-zag.

INTERPRETATION:

In order to determine mannitol use, the organism has to grow on this medium, in other words, it has to be salt resistant. If it is sensitive to high salt and does not grow, there is no way to use this medium to determine mannitol use. In that case, one can just use mannitol sugar broth (it has no high salt content).

There is already an indicator, phenol red, incorporated into the agar. A zone of yellow around the growth area identifies the presence of the mannitol use.
QUESTIONS:

1. What is so very different about this medium?

2. How do you tell if the organism is using the sugar?

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