Pre-Reduced, Anaerobically Sterilized (PRAS) Media

60% improved recovery of anaerobes with OxyPRAS Plus® plates compared to non-PRAS plates.

~Reported by a large clinical reference lab

What Makes Media PRAS?

Why is PRAS Media Superior?

Anaerobe microorganisms are among the most difficult microbes to isolate and grow. Environmental conditions required to grow anaerobes certainly contribute to these difficulties and add to the cost and time spent working with them in the clinical laboratory.

We all know the environment for anaerobes needs to be free of oxygen. Not everyone knows anaerobes need a reduced environment too. The reduced environment is physiologically necessary for anaerobes to produce energy for growth.

There is some confusion on this requirement because the lack of oxygen and a reduced environment are related, but not identical. It is possible to have an environment devoid of oxygen, but not sufficiently reduced to grow some anaerobes.

Recovery of anaerobes nearly doubled with OxyPRAS Plus® plates when compared to non-PRAS plates.

~Reported by a university hospital

The explanation for this lies in the oxidation – reduction state of molecules that make up the environment. It is possible to have molecules in the oxidized state (lacking valent electrons) even though oxygen is absent.

To accommodate this requirement, microbiologists add reducing agents to medium formulated to grow anaerobes. You will find reducing agents, such as thioglycollate and cysteine, in virtually all media used for anaerobes. However, adding reducing agents to media creates a different problem. [1,2]

When the medium with reducing agents is sterilized by autoclaving and the medium contains oxygen, the reducing agents are among the first molecules to be oxidized. This lessens the reduced state that can be achieved in the final medium.

Perhaps more important is that organic peroxides formed during medium sterilization under these conditions are inhibitory to some anaerobes. [3,4]

Furthermore, once formed during medium preparation, these oxidized products cannot be removed by placing the cooled, finished medium into an anaerobic and reduced environment.

The only way to eliminate these oxidation products is to prevent them from being formed during the preparation of the medium. To meet this goal, microbiologists defined a set of conditions for preparing media for anaerobes that required the medium to be first made anaerobic before reducing agents are added and then sterilized in the reduced state. This became known as **PRAS** media (**P**re-**R**educed **A**naerobically **S**terilized). [2]

Only **PRAS** media meets the requirements of all clinical anaerobes for growth and isolation. [5,6]

Over the last year since switching to OxyPRAS Plus® plates from non-PRAS plates anaerobe recovery has increased more than 50%.
~Reported by a large metropolitan lab

References:

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