Discussion Question

6 points

How does sodium azide help in the isolation of lactic acid bacteria from a sample containing *Pseudomonas aeruginosa* and *E. coli*? Include in your answer how sodium azide works and how it specifically affects the growth of each organism involved. (6 points)

Sodium azide binds heme and inactivates cytochrome oxidase so that aerobic respiration is inhibited. (1 point)

Lactic acid bacteria (LAB) only performs fermentation so their growth is not affected by sodium azide in the medium. (1 point)

*Pseudomonas aeruginosa* only performs aerobic respiration (Note: as was determined in the OF glucose test in the Enzymes and Adaptation Exercise) so it would not grow at all in the presence of sodium azide and not compete with the growth of LAB. (2 points)

*E. coli* performs fermentation and aerobic respiration (this was mentioned in lecture). Therefore, it would grow by fermentation and not aerobic respiration in the presence of sodium azide. Fermentation makes less ATP than aerobic respiration, so it would grow slower and not overgrow the LAB. (2 points)