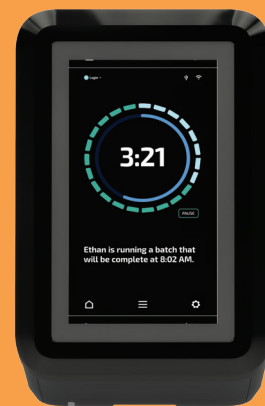


Probing formulation differences in Super Optimal Broth with catabolite repression media.



BACKGROUND

Super Optimal Broth with catabolite repression (SOC) media is identical to traditional Super Optimal Broth (SOB) media, but it includes 20 mM glucose. SOC media use maximizes the transformation efficiency of competent cells (e.g., *E. coli*). The added glucose makes SOC media an optimal choice to ensure the metabolic health of bacteria after transformation. Typically, freshly transformed *E. coli* are incubated for an hour in SOC before plating on selective media. Despite its implementation, there can be variations in the individual component concentrations between different media's commercial sources. This can be due to varying sources of raw materials or preparation procedures during manufacturing. These changes may affect the culture's performance after transformation, especially if processes have been established based on another vendor's media.

THE EXPERIMENT

All commercially available SOC liquid media was tested fresh and handled following the manufacturer's instructions. All samples were diluted 250x before analysis on the REBEL with no additional sample preparation. (Figure 1)

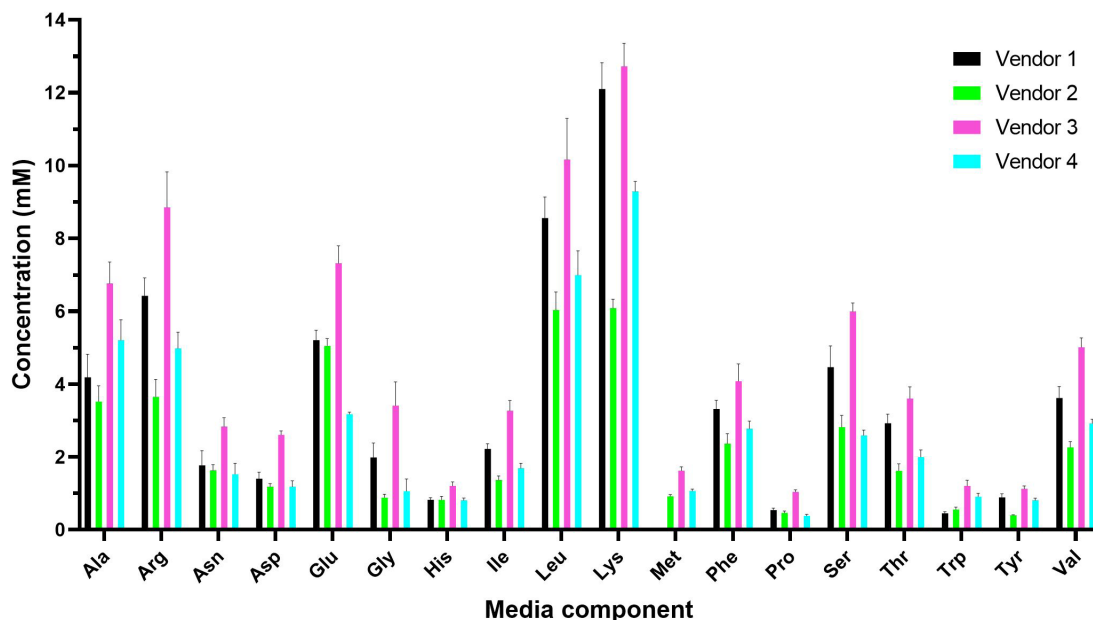


Figure 1: Media component concentrations from SOC media diluted by 250x before analysis. Error bars are from the standard deviation of n = 5 replicates.

DISCUSSION

When compared to each media component's averages across the four vendors of SOC media, vendor 3 had the most considerable variations. Eleven different components had concentrations that were more than 40% higher than the average levels. The most significant deviations were with Asp, Gly, and Pro, which were all detected higher than the averages by 64%, 86%, and 71%, respectively. Trp showed the highest difference in vendor 1's media being detected 42% lower than the average. Vendor 1 also had no detected amount of Met. Gly and Tyr were both detected at 52% lower and 50% lower, respectively, in vendor 2's SOC media. The only significantly different media component in vendor 4 was Gly, as it was detected 42% lower than the average. As shown here, uniformity among vendors of SOC media should not be assumed. Testing media before the start of culture ensures that the levels of nutrients in a media are at a desirable level.

