

## The effects of antifoam agent on dead end filtration process

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### ABSTRACT

The formation of foam as a result from introducing gases during cell culture process in the bioprocess industry has indirectly affected the throughput of the product of interest. Due to that, antifoams were developed and established as one of the means to minimize the formation of foam in the cell culture. There are many types of antifoams but the silicone-type of antifoams are widely used in the bioprocess industry. Although the establishment of antifoam has aided the cell culture process, the impacts of its presence in the cell culture to the downstream process especially the dead end filtration is not widely discussed. The findings in the study emphasized on the dead end filtration performance that includes flux rate profile and the resulted filtration capacity. In this study, the concentrations of antifoam injected into the solution were varied from 0.2% v/v – 1.0% v/v and the solutions were filtered using constant flow method. The resulted maximum pressure readings and final flux rates indicated that the resistance exerted to the feed flow rate increased as the concentration of antifoam loaded in the solution increased. This later has led to the decline in the flux rates with percentage reduction between 32 – 68%. The calculated filter capacity for flux rate of 1000LMH ranged from 53 – 63L/m<sup>2</sup> while it is in the range of 40 – 43L/m<sup>2</sup> for flux rate of 2000LMH. The presence of antifoam agents in the feed load was determined to have negative effects on the dead end filtration performance and it may reduce the efficiency of the dead end filtration process.

### KEYWORDS:

Cells; Silicones; Sustainable development