UNIVERSITI TEKNOLOGI MARA

EFFECTS OF ORGANIC ANTIFOAM AGENT ON FILTRATION PERFORMANCE

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ABSTRACT

In bioprocessing, contamination events are often found to give a negative impact toward many organization in term of the lost batches and also production time. Filter are the main priority to handle this problem from ensuring the quality of product especially in biopharmaceutical from being effecting by unwanted impurities of particles. Another problem that can lead to contamination is foaming. Foam that are existing in the product will be minimizing and maximizing the product of interest, to prevent this, antifoam agent are introduced. The findings in the study emphasized on the dead end filtration performance includes the flux rates and it viscosity and loading filtration capacity on membranes filter. In this study, the concentrations of antifoam added into the solutions are 0.2%, 0.6% and 1.0% v/v and solutions were filtered using constant flow method. There are three types of membranes use to run the experiment which is Cellulose Acetate, Cellulose Nitrate and Polyethersulfone, PES. Result demonstrated that by using the PES membrane, the highest flux rate can be obtained which is 1810.720LMH with initial flux rate of 2000LMH. While for resistance, the highest that can be achieved are 0.0470 psi/LMH by using cellulose acetate for the initial flux rate of 1000LMH. Lastly, the highest viscosity that can be achieved are 575.9 cP by using cellulose nitrate membrane for the initial flux rate 2000LMH. The antifoam agent which is added to the solution may reduce the efficiency and cause negative effects on the dead end filtration performance and it filtration process. The findings in the study emphasized on the dead end filtration performance includes the flux rates and it viscosity and loading filtration capacity on membranes filter

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CHAPTER 1

INTRODUCTION

1.1 Background of study

In the area of downstream processing especially for manufacturing at the industry, there will be about half of the spending cost will recovered for almost all the process in the biochemical process in terms of capital and operational expenses in delivering such as purified the product to market which this will include the operational expenses encompassing equipment, times, and buffer preparation, process condition, equilibrium and cleansing and it is important step for purity and recovery for the fermentation. (lee & D'Amore, 2011). Due to these, any proper process development that can lowering the manufacturing cost and making the standard cost should be more attractive especially for the product. (lee & D'Amore, 2011). A variety of economic analysis interpret that development process and clinical manufacturing costs can be estimated by 40-50 per cent of the cost of the development of a drug. Further to that, the manufacturing trade, driven mainly by the cost of consumable materials downstream processing, this can reach up to 25 percent of the proceeds of sale for drugs. Production of drugs needed is the ability and effectiveness at an affordable cost per unit is the goal of the entire process of downstream purification. For example to achieve the development lifecycle of the drugs, the development lab or pilot laboratory should be ultimate the production of commercial. In the early life of a drugs candidate, a developer can remove several variants of the main molecules rapidly screened for biological activity and stability.

The downstream processing having a impurities that could be a product that not specified, residual of the proteolysis target or other proteins, or aggregates of the target product. By referring to the federal regulatory agencies (FDA) with many requirements "All production processes should be remove of wide range viruses of diverse physicochemical characteristics. It is need to two steps of the mode of action". Therefore, for each development process step, it effectiveness of removal or inactivation must be validated. In the case of separation of impurity or colloidal particles via filtration, the development process will include parameters such as fluid viscosity, pressure, direct-flow velocity,membrane load and membrane surface area. These