

Spring 5-13-2016

Evaluating sugar-based detergents as a potential alternative to poloxamer bubble protectant

Jessica Wu

Genentech, wuu.jessica@gene.com

Jayanthi Lakkyreddy

Genentech

Steven Meier

Genentech

Follow this and additional works at: http://dc.engconfintl.org/cellculture_xv



Part of the [Biomedical Engineering and Bioengineering Commons](#)

Recommended Citation

IHu W., et al. (2008) *Biotechnol Bioeng*, 101, p119-127

This Abstract is brought to you for free and open access by the Proceedings at ECI Digital Archives. It has been accepted for inclusion in Cell Culture Engineering XV by an authorized administrator of ECI Digital Archives. For more information, please contact franco@bepress.com.

EVALUATING SUGAR-BASED DETERGENTS AS A POTENTIAL ALTERNATIVE TO POLOXAMER BUBBLE PROTECTANT

Jessica Wu, Genentech, Inc.
wu.jessica@gene.com
Jayanthi Lakkyreddy, Genentech, Inc.
Steven Meier, Genentech, Inc.

Key Words: poloxamer, shear protectant, bubble protectant, Chinese Hamster Ovary (CHO)

Poloxamer 188 (commonly referred to as Pluronic® F-68) is a commonly-used medium component which protects against bubble-induced shear in mammalian cell cultures. Recently, concerns have arisen due to limited sourcing and variable performance of this critical component. In 2008, Hu, et al.¹ proposed the use of sugar-based detergents – specifically, maltopyranosides and glucopyranosides – as potential bubble protectants based on their rheological properties and relatively low toxicity to cells. This work explores the feasibility of these detergents using commercially relevant CHO cell lines and media. Detergent candidates were evaluated based on their tolerance by cells, stability in cell culture medium, and bubble protection capability, the latter of which was assessed in sparged cultures and using a rapid, high shear shake flask tool previously developed for poloxamer screening. Based on these results, maltopyranosides with branched hydrophobic tails were found to be most promising in their ability to provide sufficient protection at reasonable concentrations, while also showing reduced toxicity compared to their straight chain counterparts. Considerations enabling use of leading alternate cell protectant candidates in CHO bioreactor cultures will be discussed.

¹Hu W., et al. (2008) *Biotechnol Bioeng*, 101, p119-127.