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### Investigation on plasmid DNA separation under vacuum suction using cellulose generated and polyethersulfone ultra filters (Article)

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#### Abstract

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*E. coli* DH5a harbouring pET28a+ plasmid vector was lysed by alkaline lysis and the clarified plasmid solutions were subjected to ultrafiltration experiments using two types of ultrafiltration membrane; i.e., cellulose generated (Ultracel) and polyethersulfone PES (Biomax). Transmembrane pressures (TMP) through vacuum suction of 0.1 to 0.7 bar were applied to the plasmid sample, and the corresponding flow rates and fluxes for both filters were investigated. Even though, these two filters showed a slight different in the flux, a marked different in DNA transmission were observed. DNA transmission were generally higher with cellulose generated filters, whereby DNA transmission by Ultracel filter was at 44.3, 63.9, 74.1, 55.6 and 54.5% at TMP of 0.1, 0.18, 0.39, 0.6 and 0.7 bar, respectively. Meanwhile, for PES filters the DNA transmission was at 22.3, 38.1, 39.1, 38.0 and 37.5% at TMP of 0.1, 0.3, 0.4, 0.6 and 0.7 bar, respectively. With the cellulose generated filter, DNA transmission reached an optimum (~70%) at about 0.6 bar after which the transmission depleted at higher TMP of 0.7 bar. Throughout all of the TMP, DNA transmissions observed were generally lower with PES filter. The properties of the filter material could have contributed to the differences in DNA permeation. © 2017 Tengku Haziqamin Abdul Hamid and Azzmer Azzar Abdul Hamid.

#### Author keywords

Membrane   Plasmid flux   Plasmid purification

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