Removal of benzaldehyde from a water/ethanol mixture by applying scavenging techniques

A presence of carbonyl compounds is very common in the food industry. The nature of such compounds is to be reactive and thus many products involve aldehydes/ketones in their synthetic routes. By contrast, the high reactivity of carbonyl compounds could also lead to formation of undesired compounds, such as genotoxic impurities. It can therefore be important to remove carbonyl compounds by implementing suitable removal techniques, with the aim of protecting final product quality. This work is focused on benzaldehyde as a model component, studying its removal from a water/ethanol mixture by applying different derivatization agents as the scavengers. Discovery chemistry is performed in the beginning as a screening procedure, followed by the process design of a small-scale continuous process for benzaldehyde removal with in-line real-time monitoring. Applications of tris(hydroxymethyl) aminomethane (TRIS) are found to provide above average removal of benzaldehyde.

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