

Optymalizacja procesu jednoczesnej hydrolizy i fermentacji natywnej skrobi metodą powierzchni odpowiedzi

Białas Wojciech, Dorota Wojciechowska, Daria Szymanowska, Włodzimierz Grajek
Katedra Biotechnologii i Mikrobiologii Żywności, Uniwersytet Przyrodniczy, Poznań

Optimization of simultaneous saccharification and fermentation of the native starch by using response surface method

Summary

Ethanol production, by a simultaneous saccharification and fermentation process (SSF) of native starch from corn flour, has been performed by *Saccharomyces cerevisiae* (Ethanol Red) and granular starch hydrolyzing enzyme (STARGEN 001). The quantitative effects of mash concentration, enzyme dose and pH were investigated by the use a Box–Wilson central composite design protocol. It was found that for native corn starch, maximum ethanol concentration of 110,36 g/l was obtained using a mash concentration of 25%, which resulted in ethanol yield of 85,71%. The optimum conditions for the above yield were found for the enzyme dose of 2,05 ml/kg and pH of 5.0. These results indicated that by using the central composite design, it is possible to determine accurate values of the fermentation parameters for maximum ethanol production.

Key words:

bioethanol, native starch, simultaneous saccharification and fermentation, response surface method

Adres do korespondencji:

Białas Wojciech, Katedra Biotechnologii i Mikrobiologii Żywności, Uniwersytet Przyrodniczy, ul. Wojska Polskiego 48, 60-627 Poznań