

Salt and Nitrogen Amendment for Cellulase and Xylanase Production using Distillers' Dried Grains with Solubles-based Medium as the Feedstock

Attia Iram¹, Deniz Cekmecelioglu², and Ali Demirci¹

¹Department of Agricultural and Biological Engineering, The Pennsylvania State University, University Park, PA, 16802, USA

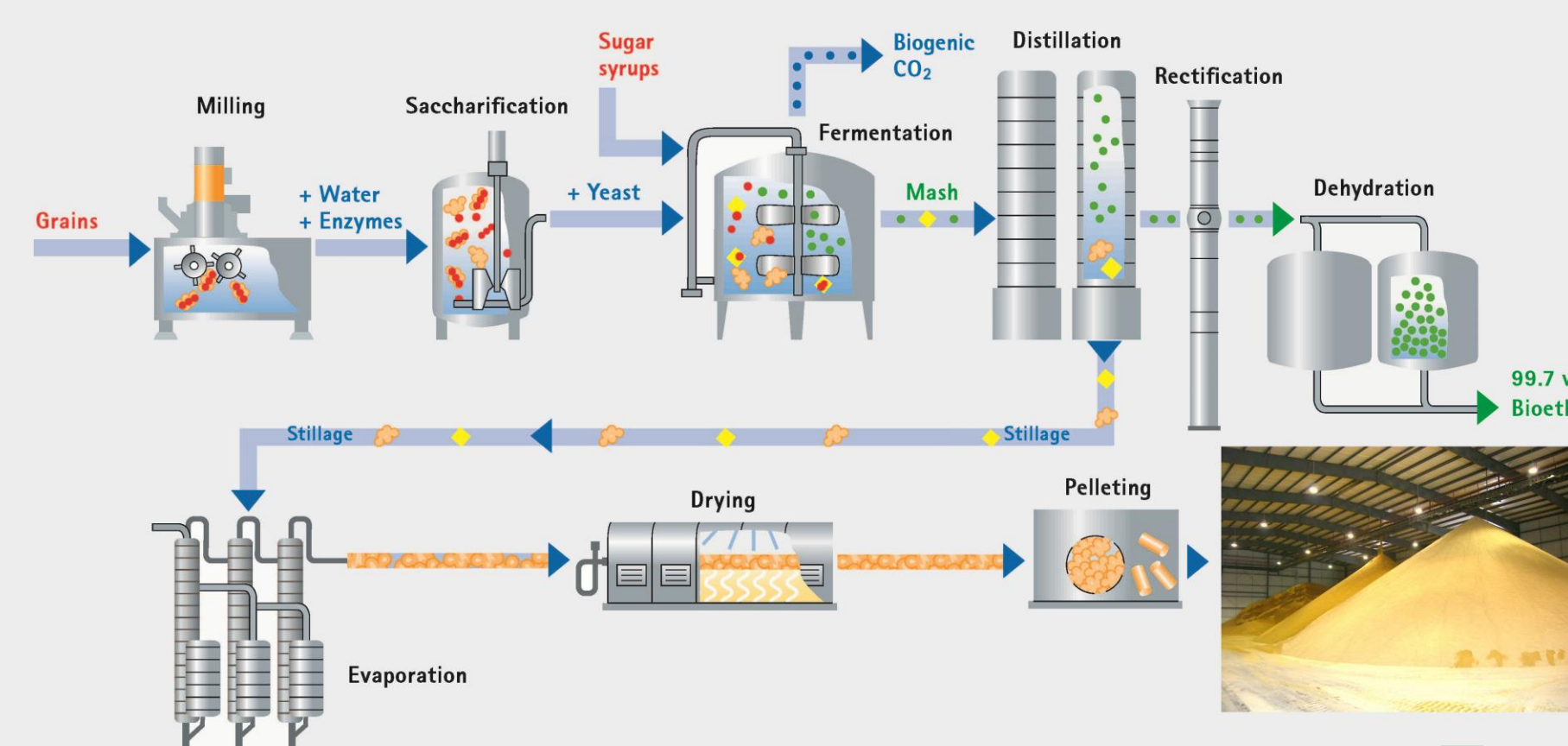
²Department of Food Engineering, Middle East Technical University, 06800 Ankara, Turkey

Abstract

Distillers' Dried Grains with Solubles (DDGS)-based medium is the by-product of bioethanol production, which has a high fiber content and it can be used as a media to produce cellulase and xylanases. Different salts such as KH_2PO_4 , $\text{CaCl}_2 \cdot 2\text{H}_2\text{O}$, $\text{MgSO}_4 \cdot 7\text{H}_2\text{O}$, $\text{FeSO}_4 \cdot 7\text{H}_2\text{O}$, $\text{CoCl}_2 \cdot 6\text{H}_2\text{O}$, $\text{MnSO}_4 \cdot \text{H}_2\text{O}$, and nitrogen sources such as ammonium sulphate, peptone, and yeast extract were evaluated for cellulase and xylanase production. Salts did not have a significant effect on enzyme production ($p > 0.05$), while ammonium sulphate was a better nitrogen source compared to peptone and yeast extract, which yielded 0.44, 0.34, 0.36 U/ml for cellulases and 49.5, 42.49, 19.41 U/ml for xylanases by *Aspergillus niger* (NRRL 330), respectively.

Background and Introduction

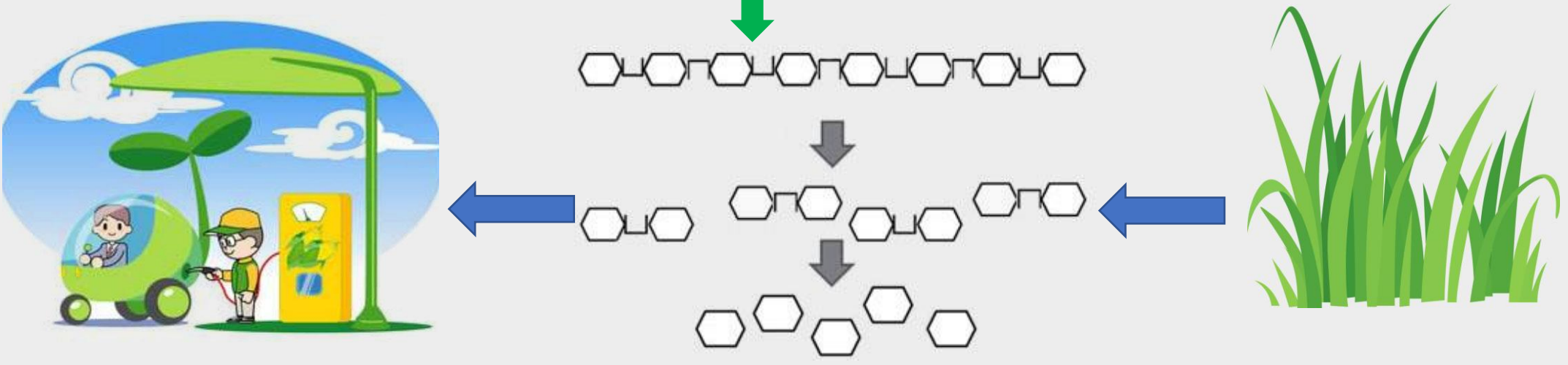
Bioethanol and DDGS Production:



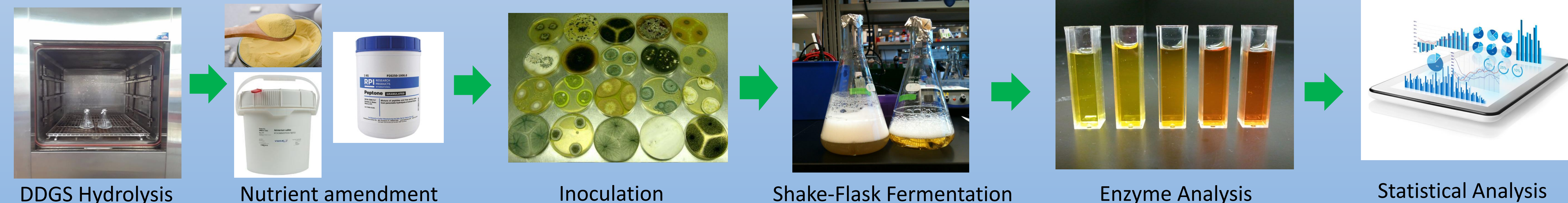
DDGS as the Fermentation Feedstock:



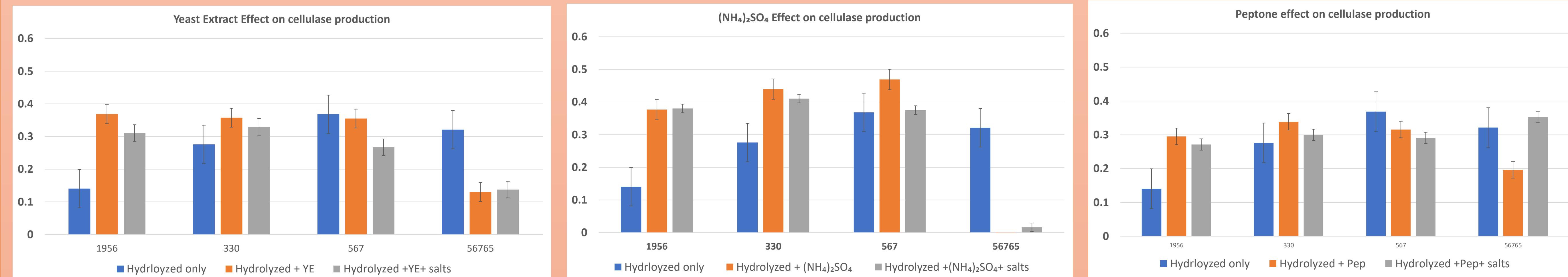
Salt and Nitrogen source amendment in hydrolyzed DDGS media



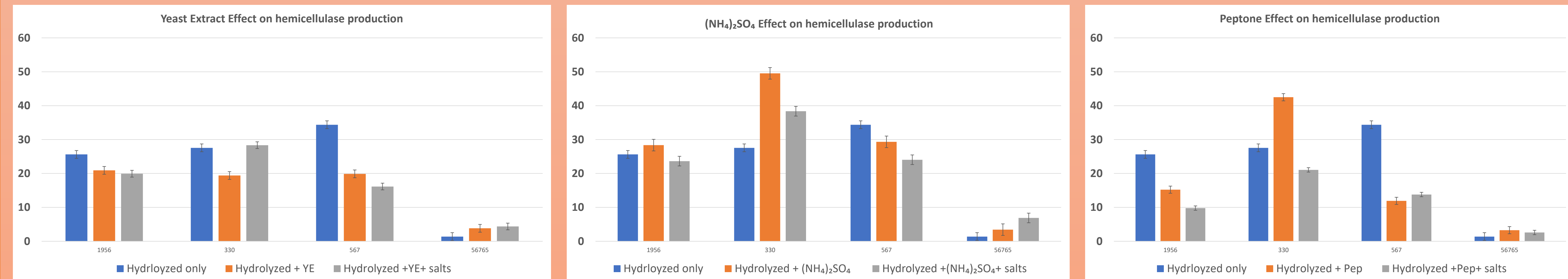
Material and Methods



Results: Cellulase



Results: Xylanase



Conclusions

Salts did not have significant positive effect on enzyme production. Ammonium sulfate was the best nitrogen source for *A. niger* (NRRL 567) with 0.47 U/ml and *A. niger* (NRRL 330) with 0.44 U/ml cellulase. For xylanases, *A. niger* (NRRL 330) produced highest (49.5 U/ml) with ammonium sulfate amendment.

Acknowledgments

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