

Factors affecting seawater-based pretreatment of date palm residues for bioethanol production

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The utilization of seawater in biorefinery has gained increasing interest recently. Seawater-based pretreatment of lignocellulosic biomass as an innovative approach has been demonstrated in our previous study 1. With respect to process optimization, factors affecting seawater-based pretreatment of lignocellulosic date palm residues were studied for the first time in this paper. Pretreatment temperature (180°C-210°C), salinity of seawater (0ppt-50 ppt), and catalytic chemicals (H₂SO₄, Na₂CO₃, and NaOH) were investigated. The results showed that pretreatment temperature exerted the largest influence to seawater-based pretreatment in terms of the enzymatic digestibility (ED) (t Ratio = 20.398) and fermentability (FB) (t Ratio = 36.861) of pretreated solids, and the inhibition of pretreatment liquids to *Saccharomyces cerevisiae*. Though salinity brought the least effects (t Ratio is 0.449 for ED and is -0.359 for FB) to seawater-based pretreatment, the independence on salinity widens the spectrum of saline water sources including not only seawater but also brines discharged after desalination. Sulfuric acid (t Ratio is 9.09 for ED and is 13.83 for FB) was the most effective catalytic chemical for seawater-based pretreatment compared with Na₂CO₃ (t Ratio is -5.55 for ED and is -7.02 for FB) and NaOH (t Ratio is -4.91 for ED and is -7.68 for FB) as shown in our study. Statement of the Problem: Women who have experienced intimate partner violence (IPV) are at greater risk for physical and mental health problems including posttraumatic stress disorder (PTSD) and alcohol dependency. On their own IPV, PTSD and alcohol dependency result in significant personal, social and economic cost and the impact of all three may compound these costs. Researchers have reported that women with these experiences are more difficult to treat; many do not access treatment and those who do, frequently do not stay because of difficulty maintaining helping relationships. However, these women's perspective has not been previously studied. The purpose of this study is to describe the experience of seeking help for alcohol dependency by women with PTSD and a history of IPV in the context in which it occurs. Methodology & Theoretical Orientation: An inter subjective ethnographic study using hermeneutic dialogue was utilized during participant observation, in-depth interviews and focus groups. An ecological framework was utilized to focus on the interaction between the counselors and the staff to understand this relationship and the context in which it occurs. Findings: The women in this study were very active help seekers. They encountered many gaps in continuity of care including discharge because of relapse. Although the treatment center was a warm, healing and spiritual place, the women left the center without treatment for their trauma needs and many without any referral to address these outstanding issues. Conclusion & Significance: Women with alcohol dependence and PTSD with a history of IPV want help however the health and social services do not always recognize their calls for help or their symptoms of distress. Recommendations are made for treatment centers to become trauma-informed that would help this recognition.

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