INFLUENCE OF FERMENTATION CONTIDIONS ON OKARA VALORIZATION

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Okara, a byproduct of soybean processing, is a rich source of nutrients and bioactive compounds. However, its disposal poses a significant environmental challenge due to its high moisture content and organic load[1]. Thus, there is a need to explore sustainable strategies for the valorization of okara. One potential application is its use as a feedstock for microbial product synthesis. Microbial fermentation can convert okara into value-added products such as enzymes, organic acids, etc[2]. This study aims to investigate the potential of okara as a feedstock for microbial product synthesis and evaluate the effect of different fermentation parameters on the glucose and elemental composition of the hydrolysate. In this study, okara hydrolysate was prepared using *Aspergillus oryzae*, with two different forms of fermentation, Submerged Fermentation (SF) and Solid-State Fermentation (SSF). The glucose content, elemental compositions (including Carbon, Hydrogen, and Nitrogen, CHN) and the pH of the resulting hydrolysate were analyzed. Results as shown in fig. 1, indicated that the hydrolysate contains substantial amounts of glucose and CHN which could support microbial product synthesis. The glucose content differs significantly ($p<0.05$) also, the C and N percentages differs significantly ($p>0.0001$) from each other as result of the fermentation type whiles the H percentage were not significantly different ($p>0.05$). The pH of the resulting hydrolysate in the range of 6.78 ±0.13 to 7.37 ±0.06 are also favorable for microbial life. This shows that different methods of valorizing okara could affect the nutrition for microbial product synthesis as such, SF could provide the best feedstock. The findings of this study could contribute to the development of sustainable strategies for the utilization of okara in food and other valuable products, and its potential contribution to the circular economy.

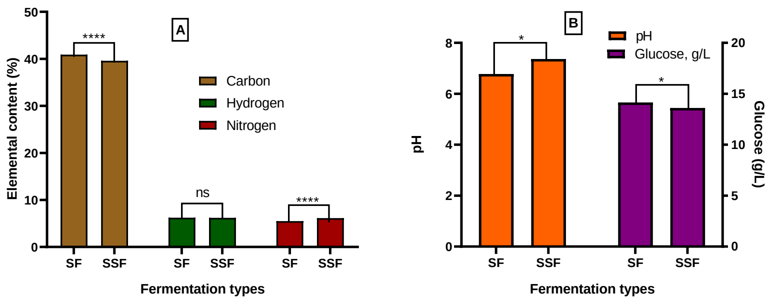

Fig. 1. Bars represent the mean values (n=3) of elemental composition (%) of okara hydrolysate from different types of fermentation [A] and pH and glucose content [B]. Submerged fermentation (SF) and Solid-Sate Fermentation (SSF). Bars with **** differ significantly $p<0.0001$ and bars with **ns** $p>0.05$ did not differ significantly in. Also bars with * differ significantly $p<0.05$.

References

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