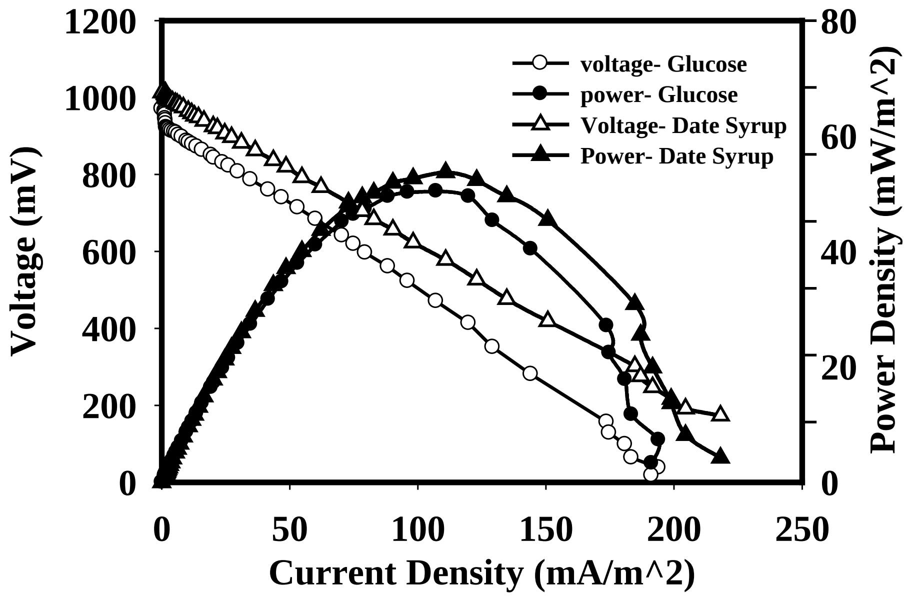

Fig. 4. Comparison of the MFC electrical performance working with glucose and date syrup as substrate at optimum concentration

4. Conclusions

In this study the effect of substrate type and concentration on the performance of microbial fuel cells was investigated. The glucose and date syrup were utilized as the carbon source for the production of electrical energy by means of *Saccharomyces cerevisiae* as the biocatalyst. Several concentrations of glucose and date syrup at the range of 1-20 $g.l^{-1}$ were experimented in a two-chambered fabricated MFC. The results revealed that the optimum concentration with the highest electrical performance were 3 $g.l^{-1}$ for date syrup and 5 $g.l^{-1}$ for glucose. Comparing the two types of substrates used in this study, date syrup has shown a superior electrical performance. The best results was achieved using the date syrup at optimum concentration of 3 $g.l^{-1}$ with the maximum power 53.7031 $mW.m^{-2}$ and current density 110.86 $mA.m^{-2}$. The results also indicated that the substrate inhibition effect may have a significant role in the performance of MFC at high concentration of glucose and date syrup.

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