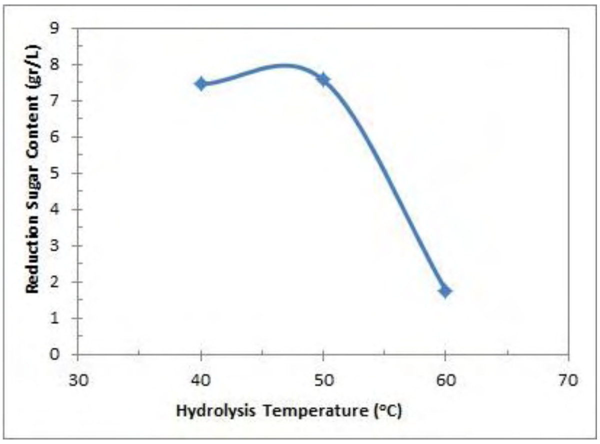

Figure 6. The Reducing Sugar Content at Various Temperature of Enzymatic Hydrolysis

The hydrolysis at pH 4 and 40^{o}C, resulted in reducing sugar concentration slightly lower than that which carried out at 50^{o}C. At 60^{o}C, the reducing sugar concentration was much lower than those obtained at 50^{o}C and 40^{o}C. In other words, the highest reducing sugar was observed from hydrolysis at pH 4 and 50^{o}C. The optimum hydrolysis temperature seemed to occur at temperature between 40-50^{o}C. This could be concluded from the difference of reducing sugar produced from hydrolysis at 50^{o}C and 40^{o}C, where they were only slightly different. This behavior might be due to a temperature range between 40^{o}C-50^{o}C was very close to the optimum temperature of the enzyme, so that the enzyme was almost reached its optimal activity and the reducing sugar produced did not differ significantly or nearly constant. This followed the biochemical theory which stated that the thermal denaturation of the enzyme as a type of protein could occur at temperature of 45^{o}C-50^{o}C. Above 50^{o}C enzyme gradually became inactive due to denatured protein [8].

4. Conclusion

The delignification of coconut coir using dilute NaOH solution was effective to reduce lignin content and increase cellulose content of the coconut coir. The increasing temperature and concentration of NaOH would increase the amount of lignin removed, and hence as well as reducing sugars produced. The best condition of the delignification was observed at 11% NaOH solution and 100^{o}C which removed 14.53% of lignin content and increased the cellulose content up to 50.23%. The best condition of the enzymatic hydrolysis was obtained at 50^{o}C and pH 4 which produced 7.57 gr/L reducing sugar. This was the maximum reducing sugar concentraion that could be achieved.

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