CHAPTER 5
CONCLUSION AND RECOMMENDATIONS

5.1. Conclusion

Based on the experiment results and discussion, it can be concluded that:

1. Fermentation conducted by dry baker's yeast and *L. plantarum* resulted fermented flour with high protein (22.98% w/w) and less acids (0.55% w/w) than its filtrate.

2. Total protein content of fermented sorghum flour was significantly affected by microorganism and sorghum flour concentration, but not affected by fermentation duration.

3. Fermentation has significant influences on the physio-chemical properties of fermented sorghum flour.

4. The fermented sorghum flour provided higher protein (23% w/w), total phenolic contents (TPC; 1.8% w/w), amyllopectin (55% w/w) and total starch (61% w/w) as well as the physical properties such as pasting temperature (91°C) and brownness (3.1) than non-fermented sorghum flour. In the opposite, fermented sorghum flour has lower moisture (3.3% w/w), total and reducing sugar (2.3% and 3.2% w/w), amylose content (5.51% w/w), viscosity (109.53cp), and L* (lightness; 80).

5. Bread modified by fermented sorghum flour has softer texture and darker color than bread modified by non-fermented sorghum flour with not significant different of preferences. The preference of both were less than control bread (100% wheat flour).

6. More concentration of fermented sorghum flour increase volume expand of bread dough and bread crumb hardness, but not significantly affecting bread color.

7. Sour dough fermentation with mix of dry baker's yeast and *Lactobacillus plantarum* result harder read crumb and lower degree of BI decreasing than dough fermentation by pure dry baker's yeast.