

The characteristic of whole wheat bread supplemented with roselle (*Hibiscus sabdariffa*) powder

ABSTRACT

Roselle (*Hibiscus sabdariffa*) has many health benefits and all parts of the roselle, including calyx, seeds, leaves, fruits and roots. Over the years, high demand for wholegrain products has been observed worldwide due to their high nutritional values and protective effects against several chronic diseases. Whole wheat bread is one of the most consumed whole-grain products. However, products of whole wheat flour had lower consumer acceptability than refined flour. The objective of this study was to investigate the effects of the addition of roselle powder (1, 2, or 3%) on the characteristics and composition of whole wheat dough and whole wheat bread. Bread quality is determined by sensory evaluation, bulk density, texture profile analysis (TPA), colour and moisture content, ash, protein, fat, crude fibre, and carbohydrates. The sensory analysis showed the 2% roselle powder was the best bread formulation with 6.65 ± 1.00 of panel acceptance compared to the other formulations. By incorporating roselle powder, the height of the dough was similar to any commercial bread (10 cm) and could shorten the fermentation time from 60 to 45 mins. Sensory-wise, the bread colour was lighter and reddish, which was appealing with the values of 53.92 ± 0.02 for ΔE^* . The firmness of roselle bread was reduced from 4.60 ± 0.42 to 2.55 ± 0.46 with a decreasing amount of roselle powder from 3% to 1% but increased to 5.19 ± 0.15 during 4 days of storage. Interestingly, roselle bread has the potential to reduce staling of bread during storage with a value of 6.29 ± 0.35 in control bread to 5.19 ± 0.15 in F2 roselle bread after certain days of storage.