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Novel breads of non-wheat flours. Food Chemistry, 282, 134-140, 2019, M21a, IF 2019 6,306

Scientific paper

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In this paper, an innovative approach was applied in the production of breads without additives based on gluten-containing (rye and oat) and gluten-free (millet and sorghum) cereals. A blend of heat treated and extruded flours of one cereal in the ratio 70:30 was used as a basic raw material, while breads were produced by conventional breadmaking process. The applied methodology included determinations of chemical composition of all flours and breads, water absorption index of flours, empirical and fundamental rheological measurements of doughs, and scanning electron microscopy (SEM), differential scanning calorimetry (DSC), colour measurement, textural and sensory evaluations of breads.

All developed breads were characterized by increased content of dietary fiber (>3 g/100 g) and appearance similar to common wheat bread, with uniformly developed and distributed pores. Gluten-free breads (produced solely from millet or sorghum flour) had textural properties different from breads produced from gluten-containing cereals (rye or oat), namely they were harder, less elastic and with more granular structure due to higher degree of starch crystallinity. The results of rheological measurements indicated various possible ways for further optimisation of novel breads.

