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Research Paper :

Study on effect of milling on quality and nutritive value of finger millet flour (*Eleusine coracana*)

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ABSTRACT

Fineness modulus of flour increased with the increase in plate clearance. As the feed rate and plate speed increased upto an optimum level, the fineness modulus decreased and further increase in feed rate and plate speed, increased the fineness modulus. Fineness modulus increased from 2.04 to 3.44 and 2.05 to 3.45 with the increase in plate clearance from 0.3 to 0.7 mm for the ragi flour from varieties GPU-28 and L-15, respectively. The least fineness modulus was recorded at 0.3mm clearance followed by 0.5 mm. Fineness modulus decreased from 2.18 to 2.04 and 2.21 to 2.05 with the increase in feed rate and attained the least value at a feed rate of about 100 kg/h for GPU-28 and L-15 ragi flours. Beyond this, the fineness modulus increased as the feed rate increased. Fineness modulus decreased from 2.36 to 2.04 and from 2.37 to 2.05 as the plate speed increased from 450 rpm to 600 rpm and it increased with further increase in plate speed in case of both the varieties of ragi. The fineness modulus recorded the least values of 2.04 and 2.05 at 600 rpm plate speed for GPU-28 and L-15 varieties ragi flour, respectively. Loss of calcium from 0.53 to 0.33 per cent phosphorus from 0.25 to 0.22 per cent and protein from 11.45 to 10.35 per cent was recorded with the decrease in plate clearance from 0.7 to 0.3 mm for GPU-28 ragi flour. The minimum loss recorded was at 0.7 mm clearance followed by 0.5 mm. Calcium, phosphorus and protein values reduced from 0.49 to 0.33, 0.25 to 0.16 and 11.62 to 10.29 per cent for GPU-28 flour, respectively as the plate speed increased from 450 to 700 rpm. The maximum reduction was noted at 700 rpm plate speed compared to 600 and 450 rpm.

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Key words : Fineness modulus, Plate clearance, Plate speed, Feed rate

Ragi is a staple and prime food for farming communities. It is a rich source of calcium (344 mg/100 g seeds), phosphorus (283 mg/100 g seeds), thiamine (420 mg/100g seeds) with 100 per cent edible matter. In traditional dietaries, it is consumed in the form of dumplings (ragi balls) by using flour. Some varieties of ragi possess very good malting qualities almost nearing the level of barley. It is also good for infants and diabetic patients.

Dohiya and Kapoor (1983) studied the effect of storage conditions on the protein quality of pearl millet flour. Whole grain flours of two high yielding varieties (HC6 and HC 7) of pearl millet were stored in polythene bags, earthen pots and gunny bags for 10 and 20 days at ambient temperature of 20-27^0 C with 60-70 per cent RH. During storage, moisture content increased where as total protein did not change. Protamines and glutamines were the major proteins constituting 63 per cent of total protein. The different protein fractions were not affected by storage conditions. Amounts of tryptophan, methionine, total and available lysine decreased during storage. Maximum decrease in protein quality was found in HC6 stored in gunny bags.

Chaudhary and Kapoor (1984) reported the nutritional value of pearl millet flour stored in polythene bags, tin cans, gunny sacks and earthern pots at 20—25^0 C and 60-65 per cent RH. During storage, the highest increase in moisture was 24 per cent in gunny sacks. In phase-I (days 6 to 10), free fatty acids ranged from 22.6 -31.0 (mg/100 g lipids) and phase-II (4 to 14 days), 27.0-32.3 (mg/100 g lipids). Respective peroxide values ranged from 18-27.3 (mg/100 g) in phase-I and 21.0-36.3 (mg/100 g) in phase –II versus 10.0-13.1 (mg/100 g) initially. The highest increase in free fatty acids, peroxide value and microbial count was seen in flour stored in gunny sacks.