

Effect of drying on colour degradation and rheology in red chilli cv. BYADAGI

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ABSTRACT

The freshly harvested red chilli (*Capsicum annum*) of Byadagi variety was subjected to conventional thin layer hot air drying to evaluate the degradation of colour and red pigment of red chilli at different moisture content of 10-80 % (wet basis). The above characteristics were studied based on absorbance ratio using spectrophotometer at different wavelengths. The results indicated that colour values were increased with decrease in moisture content. The absorbance ratio and red pigment values were decreased with decrease in moisture content. The unit colour of red chilli at different moisture content ranging between 10- 80 % (wb) would predicted by a linear equation $C = -604.53M + 84228$ with correlation coefficient $R^2 = 0.9823$.

Key words : Red chilli, Drying, Colour deyradation, Rheology.

Red chillies are the dried ripe fruit of the species of *Regenus capsicum*. India produces 68 million tonnes of green chillies per annum, which is the second largest producer in the world after China (Srivastav *et al.*, 2006). The most important quality characters in chillies are colour and pungency. It is used as a condiment or culinary supplement are subjected to long term storage. During that time important physical, chemical and biological changes takes place which have major impact on colour and pungency (Kaleemullah and Kailappan, 2007).

Red ripe chillies at the time of harvest contains high moisture (300 - 400 % db) so, they are highly perishable which needs processing and storage at optimum moisture condition. It is of considerable importance for the farmers as well as to processors and consumers. The shelf life of freshly harvested chillies is estimated to be 2-3 days based on 12-15 % cumulative loss. Reducing the moisture and providing aeration to the chillies after harvesting is essential to avoid development of micro flora and subsequent loss of quality or even total spoilage. Therefore, chillies need to be dried quickly to safe moisture content to 11 % (db) without impairing colour and pungency (Kaleemullah and Kailappan, 2006). Knowledge of the rheological properties of food purees is essential for product development and design evaluation of process equipment (Ahmed *et al.*, 2000). Hence, this investigation was carried out to know the effect of moisture on the degradation of colour and red pigment.

MATERIALS AND METHODS

Preparation of puree (sample) :

Red ripe chillies of Byadagi variety were washed in running tap water, destalked manually. A known weight of fresh chillies was taken , further dried to the required

moisture content and powdered the material using grinder. The powder was extracted using a solvent acetone with sufficient contact time till the extraction is complete and the volume was measured. Then 10 ml of solution was transfered into a weighed Petridish and evaporate the solvent completely in steam bath. After the evaporation cool the dish and the weight of the residual material in the dish was recorded. Further this sample was used for analysis like absorbance ratio and for the estimation of red pigment, capsaicin and colour.

Colour Measurement:The prepared sample (puree) of 0.5 g was transferred into 100 ml volumetric flask and volume was made upto the make using acetone and 1.0 ml of this sample was pipetted out to second 100 ml volumetric flask and again was made to 100 ml using acetone and the mixture was shaken well for uniform mixing. Colour was measured by using spectrophotometer at 462 nm by using acetone as a blank at the absorbance of 0.01 % prepared solution (oleoresin). This value was multiplied by 66,000 to obtain unit colour value. Each experiments was replicated thrice and average value were used in the analysis of results.

Absorbance ratio :

Prepared sample (0.5 gm) was transferred to 50 ml flask and volume was made to 50 ml using acetone. 0.5 ml of sample was diluted to 50 ml with acetone. Absorbance was measured at 470 nm and 455 nm against acetone as blank. Each experiments was replicated thrice and average value were used in the analysis Of results. Therefore, the absorbance ratio is-

$$\text{Absorbance ratio} = \frac{\text{Absorbance at 470 nm}}{\text{Absorbance at 455 nm}} \dots\dots\dots(1)$$