

## Study of drying methods and chemical treatments on quality aspects of chilli cv.LCA 334

K Uma Jyothi, S Surya Kumari, P Venkata Reddy & C Ravi Shankar

*Regional Agricultural Research Station.Lam,Guntur-522034*

*E-Mail: umajyothik@yahoo.com*

### Abstract

The experiment to using chilli Cv. LCA 334 was conducted at Regional Agricultural Research Station. Lam, Guntur during the year 2003-2004. The results revealed significant differences among different drying methods and chemical treatments and their interactions on quality constituents of chilli viz; oleoresin, capsanthin and capsaicin. Among the drying methods, Tobacco barn drying gave the highest oleoresin content of 10.5% and was found superior to the other methods of drying viz; ground, tarpaulin and mechanical drying. However, the chemicals viz; BHA (Butylated Hydroxy Anisole), potassium carbonate and dipsol used for drying did not exert significant influence on oleoresin content. Among the interactions, chilli treated with dipsol and dried in tobacco barn recorded the highest oleoresin content of 10.7% followed by chilli treated with BHA and dried in tobacco barn (10.5%). With regard to capsanthin content, the chilli dried in mechanical drier recorded the highest value (14503 EOA colour value) followed by tobacco barn drying (13893 EOA colour value) and were found superior to chilli dried on ground / tarpaulin. Among the chemical treatments, chilli treated with dipsol recorded the highest capsanthin content (13923 EOA colour value) and found significantly superior to all the other treatments tried.. With regard to the capsaicin content, chilli dried in tobacco barn recorded the highest capsaicin content (0.502%), closely followed by chilli dried on ground (0.498%) and were found on par with each other and significantly superior to tarpaulin and mechanical drying.. Among the chemicals, BHA significantly increased the capsaicin content (0.508%) and found superior to check (0.468%) and also the other chemicals tried. Among the interactions, chilli treated with BHA and dried in tobacco barn recorded the highest capsaicin content (0.576%) and found significantly superior to all other interactions.

**Key words:** chilli, oleoresin, capsanthin, capsaicin, drying methods, chemical treatments.

**Abbreviations:** BHA =Butylated Hydroxy Anisole,EOA= Essential Oil Association

Traditionally in the States of Andhra Pradesh, Karnataka and Maharashtra after harvest fruits are spread uniformly on mats, rooftops, tarpaulins or on floor and sun dried to moisture of less than 10%. Frequent stirring is done to avoid any mould

growth and for obtaining uniform drying. The dried chillies are stored in gunny bags for marketing. During this period, the deterioration in quality is more due to improper packing and storage. Adoption of mechanical solar driers, thermal driers etc is

quicken the drying process and retaining good colour and glossy texture. Another major advantage of the thermal electrical driers is that the aflatoxin contamination can be avoided. Reports revealed that over drying may result in colour fading. The dried chilli should be kept at the moisture level of 10 %. Diseased and discoloured fruits are removed regularly for obtaining quality produce. Most important controllable factor affecting colour retention during storage are temperature and sunlight. At high temperatures the deterioration of colour becomes more rapid.

The colour deterioration in ground product increases rapidly when exposed to air and sunlight. Moisture also has an important role in colour retention in whole chillies and ground chillies. Excess and low moisture level has adverse effect on the colour retention properties and development of aflatoxins in chilli and its value added products. Against this background a study was undertaken on the effect of drying methods and chemical treatment as quality aspects.

Healthy ripe fruits of LCA 334 were collected and dipped in the following chemical solutions for 10 minutes and the excess solutions were drained out and dried in different drying methods as given below. The experiment was conducted in a randomized block design with factorial concept and replicated thrice. The first factor is Method of drying [Ground, Tarpaulin, Mechanical,

Tobacco barn] and factor 2 is Chemical treatments [Butylated Hydroxy Anisole 0.2% (BHA), Potassium carbonate 0.2%, Dipsol, Check(Un treated)]

After drying, the samples were drawn from each treatment and subjected to chemical analyses. Oleoresin and capsanthin were estimated as per the procedure outlined by Roserbrooke et al(1968) and capsaicin by Bajaj and Gurudeep Kaur(1979). the data of various observations taken were statistically analysed as outlined by Panse and Sukhatme(1978).

### Oleoresin (%)

The data regarding the percentage of oleoresin as influenced by methods of drying, chemical treatments and their interactions are presented in Table-1

The results presented in Table-1 revealed a significant effect on percentage of oleoresin due to different methods of drying, chemical treatments and their interactions.

Among the different drying methods, Tobacco barn drying gave the highest oleoresin content of 10.5% and was found to be significantly superior to other methods of drying viz; ground, tarpaulin and mechanical drying. Similar results of better quality by adopting improved technology over traditional method of sun drying was reported by Sumathy kutty and Mathew,1987. With regard to chemical treatments, none of

**Table 1.** Effect of drying methods and chemical treatments on oleoresin content of chilli Cv.LCA 334(%)

Drying/chemical	Ground	Tarpauline	Mechanical	Tobacco Barn	Mean
BHA	8.6	8.5	8.8	10.5	9.1
K <sub>2</sub> CO <sub>3</sub>	8.3	8.9	8.7	10.4	9.1
Dipsol	8.4	8.7	8.2	10.7	9.0
Check	8.8	8.6	8.7	10.3	9.1
Mean	8.5	8.7	8.6	10.5	
		SEM	CD (P=0.05)	CV%	
Drying methods and Chemical Treatments Interaction		0.190	0.269	3.0	
		0.381	0.538		

them exert any significant influence on oleoresin content. Among the interactions, chilli treated with any chemical and dried in tobacco barn recorded significantly higher oleoresin content compared to other methods of drying. However, chilli treated with Dipsol and dried in tobacco barn recorded the highest oleoresin content of 10.7% followed by chilli treated with BHA and dried in tobacco barn (10.5%).

#### Capsanthin (EOA colour value)

The data regarding the capsanthin content of chilli Cv LCA 334 as influenced by methods of drying, chemical treatments and their interactions are presented in Table-2.

The results presented in Table-2 revealed significant effect on capsanthin content due to different methods of drying, chemical treatments and their interactions.

other treatments. Similar results were reported earlier (Anonymous, 1993). Among the interactions, chilli treated with Dipsol and dried in mechanical drier recorded the highest capsanthin content (15616 EOA colour value).

#### Capsaicin (%)

The data regarding the capsaicin content of chilli Cv LCA 334 as influenced by methods of drying, chemical treatments and their interactions are presented in Table-3

The results presented in Table-3 revealed significant effect on capsaicin content due to different methods of drying, chemical treatments and their interactions.

Chilli dried in tobacco barn recorded the highest capsaicin content (0.502%), closely followed by chilli dried on ground (0.498%) and were found on par with each other and

**Table 2.** Effect of drying methods and chemical treatments on capsanthin content of chilli Cv.LCA 334 (EOA colour value)

Drying/chemical	Ground	Tarpauline	Mechanical	Tobacco Barn	Mean
BHA	8.6	8.5	8.8	10.5	9.1
BHA	11102	12261	13298	13603	12566
K <sub>2</sub> CO <sub>3</sub>	10858	11346	13603	13786	12398
Dipsol	12200	13176	15616	14701	13923
Check	10919	11895	15494	13481	12947
Mean	11270	12170	14503	13893	
		SEM	CD (P=0.05)	CV%	
Drying methods and Chemical Treatments Interaction		95.0	286.39	2.07	
		190.0	607.94		

Among the different drying methods, mechanical drying gave the highest capsanthin content of 14503 EOA colour value. It was followed by tobacco barn drying with 13893 EOA colour value and were found to be significantly superior to the other methods of drying viz; ground and tarpaulin. With regard to chemical treatments, chilli treated with Dipsol recorded the highest capsanthin content(13923EOA colour value) and found significantly superior to all the

significantly superior to tarpaulin and mechanical drying. Among the chemicals, BHA significantly increased the capsaicin content (0.508%) and found superior to check (0.468%) and also the other chemicals tried. Among the interactions, chilli treated with BHA and dried in tobacco barn recorded the highest capsaicin content (0.576%) and found significantly superior to all other interactions.

**Table 3.** Effect of drying methods and chemical treatments on capsaicin content of chilli Cv.LCA 334 (%)

Drying/chemical	Ground	Tarpauline	Mechanical	Tobacco Barn	Mean
BHA	0.472	0.536	0.448	0.576	0.508
K <sub>2</sub> CO <sub>3</sub>	0.532	0.396	0.428	0.434	0.448
Dipsol	0.468	0.440	0.430	0.424	0.441
Check	0.456	0.402	0.440	0.574	0.461
Mean	0.498	0.428	0.437	0.502	
		SEM	CD (P=0.05)	CV%	
Drying methods and Chemical Treatments Interaction		0.005	0.015	3.029	
		0.010	0.0320		

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