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EFFECT OF STORAGE FUNGI ON PROPERTIES OF KUJRI OIL

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Fourteen species of fungi were isolated from non sterilized seeds of Kujri during one year of storage. The quality and quantity of oil changed due to the presence of these storage fungi.

Keywords: Storage fungi, Kujri, Thiri Garhwal.

INTRODUCTION

Kujri, *Celastrus paniculatus* L. of family Celastraceae is commonly found in the forest of FRI (forest research of Institute) vally of Dehradun of Tehri Garhwal Uttarkhand state. Villagers collect the kujri fruits, dry it, take out the seeds and stored the seeds in gunny bags, earthen pots and in poora (made up of husk). Kujri oil is medicinally used by tribes of Mussoorie Dehradun Tehri Garhwal Badshai tholl mainly to cure ulcer, tuberculosis and in various skin diseases. The stored seeds are heavily contaminated with fungi and can be seen in the form of powdery mass on the surface of seeds.

MATERIALS AND METHODS

Seeds of Kujri were collected from different areas of Mussoorie Dehradun Tehri Garhwal Badshai tholl. Sun dried and stored in gunny bags for research work. The seeds were taken out at an interval of one month for one year and cultured in different media separately to study the mycoflora. Fourteen species were identified. At the same time side by side the oil content, refractive index, saponification value and fat acidity value of oil was also determined.

1- Determination of the total oil content:

For determination of oil contents 5 gm of dried seeds of freshly harvested and fungal in-fested seeds of Kujri were taken separately. Oil extracted and % of oil was determined with the of formula-

$$\text{Percentage of total oil} = \frac{W_1 \times 100}{W}$$

W= weight of seed W₁= weight of oil

Stored infested seed of Kujri were taken at an interval of one mouth for one year. The Percentage difference were noted.

2- Determination of Refractive index-

Refractive index of Kujri oil were determined with the help of spectrometer calculated with formula.

$$\mu = \frac{\frac{\sin A + \delta m}{2}}{\frac{\sin A}{2}}$$

Where A = angle of prism δm = angle of minimum deviation.

3- Determination of Saponification value-

Saponification value of oil was calculated as follows-

$$\text{Sap value} = \frac{56(V_1 - V_2)100}{2000 \times W}$$

V_1 = volume of N/2 oxalic acid used without oil

V_2 = volume of N/2 oxalic acid used with oil

W = weight of the oil

4- Determination of fat acidity value-

$$\text{FAV} = \frac{V \times 56.1}{W}$$

V = amount of normal of fat acidity value-

W = weight of oil.

RESULT AND DISCUSSION

In the harvest month Sept. 1995 the oil content was 44%. The oil content of stored seeds in the successive eleven months lowered from 43% to 19%. The percentage changes at the end of one year was -25. Considerable loss in oil content during storage has been reported for different oil seeds, Ward and Diener (1961) in shelled peanut, Lalithakumari; et al.; (1971), in castor, Singh and Prasad, (1977), in sunflower in 1981 in soyabean. Refractive index of freshly harvested Kujri oil in Sept. was 1.745. In one year of fungal infestation the value gradually decreased to 1.729 μ . Maximum percentage change was 0.016 μ . Singh and Prasad, (1977), in sunflower, Bose and Nandi, 1982, in Safflower, Srivastava, (1995) in Kusum also reported lowering of the refractive index.

For Kujri oil during harvesting period in Sept. 1995 saponification value was 28.2%. After 11 months of fungal infestation saponification value gradually increased upto 30% and percentage change was + 1.8. There was little increase in saponification value. Lalithakumari et al., (1971a), reported increase in saponification value of groundnut oil. Sharma (1981) reported increase in sap Value of Sesame, Neera and Mehrotra (1992) report sap value of sunflower increased due to presence of various seed bom fungi.

For Kujri oil during harvesting period F.A.V. was 1.9%, the value increased after one year of fungal infestation and maximum percentage change was 66.9. Increased F.A.V. shows lipolytic activities of the fungal infestation. It has been reported by Lalithakumari ef al. (1971a). Robertson ef al. (1973), and Despandey and Pancholy (1979).

Table 1: Changes in total Oil content, Refractive Index, Saponification value and Fat Acidity value of Kujri oil during one year of fungal attack.

SI.	Months	Total Oil	Refractive	Saponification	Fat Acidity
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No.		Content- percentage (5 gm seed)	Index in μ	value- percentage (1 gm oil)	value- percentage (1 gm oil)
1	September 1995 (control)	44	1.745	28.2	1.9
2	October- 1995	43.9	1.745	28.5	14.0
3.	November-1995	43.6	1.745	28.6	21.0
4.	December-1995	42.3	1.740	28.8	23.8
5.	January- 1996	38.8	1.738	29.0	31.5
6.	February- 1996	37.0	1.735	29.1	38.0
7.	March-1996	34.4	1.734	29.2	43.1
8.	April-1996	33.0	1.734	29.5	54.0
9.	May- 1996	30.0	1.733	29.5	55.1
10.	June- 1996	26.2	1.730	29.6	58.4
11.	July-1996	23.5	1.729	29.8	63.5
12.	August- 1996	19.0	1.745	30.0	67.8

The colour of fresh Kujri oil was light reddish brown, which after one year of stored seeds changed to dark brown. It can be concluded that due to biodeterioration by storage fungi the quality and quantity of Kujri oil changed.

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