

# Effect Of Drying On Basil Leave By Using Microwave

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**Abstract**— The Basil leaves (*Oscimum Sanctum*) one amongst inexperienced leafed healthful plant was wide employed in Bharat for seasoning purpose. The healthful plants square measure extremely putrefiable in nature and so terribly short period. These basil leaves were washed for take away dirt and dirt. The basil leaves were then dried in several drying condition like microwave drying (70,350 and 500 W) for 6-26 min. The dried leaves were analyzed for his or her proximate analysis. These basil leaves powder were use for the flavour enhance and any method.

expansion of microorganisms and preventing the onset of some organic chemistry reactions which will alter the organoleptic and nutritional characteristics of the dried leaf. However, drying should be performed rigorously so as to preserve the aroma, look and nutritional characteristics of the raw herbs the maximum amount as potential (Crivelli et al., 2002). The drying could cause losses in volatilities or formation of latest volatilities as a results of oxidization reactions, esterification reactions (Diaz-Maroto et al., 2002).

**Keywords**— Basil leaves, Dehydration, Microwave oven

## I. INTRODUCTION

Tulsi (*Ocimum sanctum*), Queen of Herbs, the Legendary, "Incomparable One" is one amongst the holiest and most cherished of the numerous healing and health-giving herbs distributed chiefly within the oriental region [Jeba et al., 2009]. Tulsi a wide big, sacred plant belongs to the family Lamiaceae family. it's referred to as by names like Rama Tulsi avatar Tulsi in Indic and Holy Basil in English. The natural environs of Tulsi varies from water level to Associate in Nursing altitude of 200 m. it's found growing naturally in wet soil nearly everywhere the world [Naquvi et al., 2012]. Tulsi has been used for thousands of years in piece of writing, a Hindu type of bioscience, for its numerous healing properties. it's mentioned within the Charaka Samhita, Associate in Nursing ancient Ayurvedic text. Tulsi is taken into account to be Associate in Nursing adaptogen, reconciliation totally different processes within the body, and useful for adapting to fret. Marked by its robust aroma and astringent style, it's regarded in piece of writing as a form of "elixir of life" and believed to market longevity. If besprent over roasted food in hold on water, tulsi leaves stop microorganism growth throughout the eclipses [Siddiqui et al., 1993].

Drying is that the commonest and effective technique that will increase the time period of spicy herbs by inhibiting the

## II. MATERIAL AND METHODS

Fresh leaves of cultivated basil (*Ocimum santum*) with its stalks were obtained from satara parisar (Aurangabad). The leaves were carefully cleaned manually to remove dirt and damaged ones, and were removed from the stalks. The leaf samples were divided into 3 batches. One batch was analyzed as fresh within 24 h of harvesting.

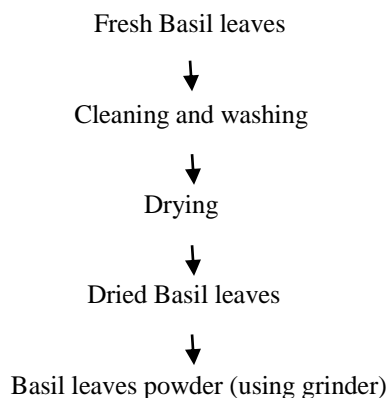
### A. Drying method

The remaining 2 batches of basil leaves were immediately dried using one of the following methods. The drying conditions employed in each of these methods were selected after trials had been conducted to achieve a percentage moisture content of <6% using the shortest possible time for the drying. Microwave oven dried at 350W for 10 min, the dried leaves were then crushed with a domestic mixer to make a powder. The reported data are means of three replications

TABLE I. MICROWAVE-DRYING METHOD

Treatment's	Temperature (W)	Time (min)
T <sub>1</sub>	70	26
T <sub>2</sub>	350	16
T <sub>3</sub>	500	10

Flow chart of basil leaves powder:



### B. Chemical Analysis

The physico-chemical analysis of basil leaves powder included the estimation of moisture content (A.O.A.C. 1990), protein (A.O.A.C. 1990), fat (A.O.A.C. 1990), dietary fiber (A.O.A.C. 1990) and carbohydrate (Ranganna. S. 1986).

## III. RESULTS AND DISCUSSION

### A. Drying characteristics of basil leaves powder

Drying characteristics represent the changes occurring during the drying and it helps in understanding drying behavior and effect of different temperatures on rate of drying of basil leaves. During present investigation, the drying characteristics of basil leaves powder of different temperature were investigation by determining the different watt. The result obtained during present investigation are summarized and discussed under following suitable sub-heading.

### B. Different temperature used during drying

Drying characteristics of basil leaves powder at three different temperature (viz. 70W, 350W, 500W) are determined by taking observations after results and presented in Table 3

TABLE II. EFFECT OF DIFFERENT TEMPERATURE ON DRYING RATE OF BASIL LEAVES POWDER

Temperature (Watt)	Time(min)	Yield (%)
70	26	18.9
350	16	19.7
500	10	20.4

<sup>a</sup>. Each value is an average of three determinations.

It evidence from the Table 3 that the time required for drying of basil leaves with the percent yield of powder is shown at the temperature of 70W the time required 26 min and percent yield in that temperature is 18.9 and 350W is a selected sample.

TABLE III. PHYSICAL ANALYSIS OF BASIL LEAVES POWDER PREPARED AT DIFFERENT TEMPERATURES

Parameter	Powder at 70 W	Powder at 350 W	Powder at 500 W

Color	Dark green	Dark green	Dark green
Bulk density (g/cm <sup>3</sup> )	0.25	0.25	0.25
Sp. gravity (kg/m <sup>3</sup> )	0.26	0.26	0.26
Rehydration ratio (%)	0.25	0.25	0.25

<sup>b</sup>. Each value is an average of three determinations.

From the Table 4 it was revealed that basil leaves powder dried at different temperatures show difference in physical attributes. The color of powder remains the same at all drying temperature. From the results it was observed that the powder dried at 350W was better in all physical attributes.

### C. Chemical analysis of basil leaves powder

TABLE IV. CHEMICAL ANALYSIS OF BASIL LEAVES POWDER PREPARED AT DIFFERENT TEMPERATURES

Composition	Powder at 70 W	Powder at 350 W	Powder at 500 W
Moisture (%)	5.52±0.2	5.52±0.1	5.52±0.1
Ash (%)	13.8±0.3	15.6±0.2	14.1±0.2
Fat (%)	20.3±0.1	22.2±0.2	23.4±0.1
Fiber (%)	0.98±0.2	0.97±0.1	0.97±0.2
Protein (%)	2.96±0.2	3.0±0.2	2.0±0.1
Carbohydrate (%)	58.4±0.1	59.6±0.2	59.38±0.1

<sup>c</sup>. Each value is an average of three determinations.

From the Table-5 it was revealed that basil leaves powder dried at different temperature show difference in chemical composition. The moisture content of basil leaves powder at 500W was (5.52%), 70W and 350W of basil leaves powder. The similar trend was observed for fat. The protein content was high at 350W i.e. 3.0 and lowest at 500W i.e. 2.0. The powder dried at 350W has more ash contain (15.6%) than powder dried at 70W and 500W (13.8 and 14.1) respectively. The carbohydrate contain at 350W is slightly high (59.6) than 70W and 500W i.e. (58.4 and 59.3) respectively. From the result it was observed that the powder dried at 350W was better in chemical attributed.

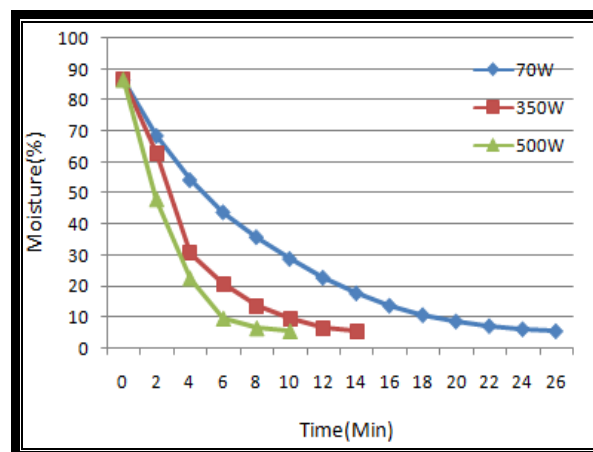


Fig. 1. Chart 1 Rate of drying of curry leaves at different temperatures.

Above Chart 1 showed the rate of removal of the moisture at different temperature ranges i.e. 70W, 350W and 500W. Above drying curve indicates that there is slow rate of moisture removal at 70W. It takes 26, 14 and 10 min for reducing moisture content to desired level of dried basil leaves which was pretreated at 70W, 350W and 500W temperature respectively.

It was observed that the drying of basil leaves which was pretreated take place in falling rate period. The drying rate is faster at the beginning and it decreases continuously with the removal of moisture and it became more prominent as the temperature increases.

#### CONCLUSION

It can be conclude that the microwave drying is the best method for drying basil leaves. In that microwave drying takes short time to remove moisture from the leaves. Three different powers are use in microwave drying i.e. 70, 350 and 500W. In

that 350 W is good because it have good retention like fat, protein, fiber and carbohydrate etc. as compared to the 70W and 500W.

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