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Some Physico Chemical Properties of Dried Amla

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ABSTRACT

A study was carried out to determine some Physico chemical properties of dried amla sample using cabinet tray drying and open sun drying as drying methods. Highest Ascorbic acid was achieved as 608 mg/100g in cabinet drying at 50°C and least of 576.3 mg/100g in open sun drying. Highest protein content was achieved as 2.16 % in cabinet drying at 60°C and least of 2.02 % in open sun drying. The highest fat content was found to be 0.77 % in cabinet drying at 70°C and least of 0.45 % in open sun drying. Whereas highest ash content was found to be 2.31 % in open sun drying and least of 2.23 % in Cabinet tray drying at 70°C

Key words: *Dried Amla, Cabinet Tray Drying, Open Sun Drying, Ash Content.*

INTRODUCTION

Amla is a member of the family *Euphorbiaceae*. It is an important fruit crop of tropical and subtropical regions in India. It is grown all over Asia due to its nutritional, pharmacological and commercial significance. It is also called as Anola, Amalaki, Nelli, Amla, Indian gooseberry etc in different parts of India[1].

The Annual production of Amla in India was 1319000 tonnes under an area of 107000 hectares and annual production of amla in Uttar Pradesh was 395870 tonnes under an area of 34970 hectares and in Allahabad it was 29580 tonnes under an area of 2710 hectares[2].

Amla as a rich source of vitamin-C, it is consumed in several varieties of preparations and forms. Though major share of amla production in the country is consumed in the fresh and dried form, this fruit has great demand in Indian market as well as in International market[3].

Fresh Amla offers a serious problem during storage, transport and marketing because of its high perishable nature. Amla has many functions including medicinal, but the moisture content of the Amla is a problem decreasing the shelf life of amla. The high moisture content of amla causes insect and pest attack or yeast and mould growth and it is decayed or spoiled.

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Drying is one of the preservation methods to increase the shelf life of amla[4]. There are many works related to the products of amla but little information is available regarding to the dehydration and nutritive values of amla. Therefore, an attempt has been made to study about some of the Physico chemical properties of dried amla[5].

MATERIALS AND METHODS

The experiments were carried out in the laboratory at the Department of Food Process Engineering, SHIATS, Allahabad.

Raw Material and Sample Preparation

Fresh amla were purchased from SHIATS orchard at Allahabad city. After purchasing amla, the material was washed thoroughly in running tap water to remove the adhering soil and extraneous matter. Then it was boiled and followed by deseeding. After, deseeding the samples were place in open air for surface moisture evaporation. Then, the cleaned product was weighed and 100 g samples were used for each methods of drying i.e. cabinet drying and open sun drying.

Method of analysis

Determination of Moisture Content

Moisture content of the amla slices was calculated by using the following formula.

MC (db) = $(M_w \div M_d) \times 100$ **… (2.1)**

Where,

MC (db) = Moisture content, percent (dry basis),

Mw = Mass of water (g), and

Md = Mass of dry matter (g).

Determination of Ash content

2 g of each sample were taken in dry, clean porcelain dishes and weighed accurately. Moistures of each sample were removed using drying methods. Then the samples were burnt on an electrical heater. These were done to avoid the loss of sample in the muffle furnace under higher temperature. Then the samples were transferred into the muffle furnace and burnt at 550°C temperature for 4-6 hours and ignited until light gray ash resulted. The samples were then cooled in desiccators and weighed. The ash contents were expressed as:

Ash% = (Weight of residue ÷ Weight of sample) × 100 **… (2.2)**

Determination of Protein Content

Protein was determined by following **(AOAC 2005)** method as follows:

Nitrogen% = $(((T_s - T_b) \times$ Normality of HCl $\times M_{eq.}$ of $N_2) \div$ (Weight of sample (g))) × 100 **… (2.3)**

Where,

T_s = Titer volume of the sample (ml)

T_b = Titer volume of the blank (ml)

$M_{eq.}$ Of N_2 = 0.014

Protein % = Nitrogen % × 6.25 … **(2.4)**

Determination of Fat Content

Fat content was determined by Soxhlet method[2].

% Fat = $((W_3 - W_2) \div W_1) \times 100$ **… (2.5)**

Where,

W_1 = weight of sample (g)

W_2 = weight of extraction cup (g).

W_3 = weight of extraction cup after extraction (g).

Determination of Vitamin C

Vitamin C was determined by following the method given by Ranganna[6]**.**

Mg of ascorbic acid per 100g = $((T \times D \times V_1) \div (V_2 \times W)) \times 100$ **… (2.6)**

Where,

T = Titre

D = Dye factor (Dye factor = 0.5 ÷ Titre)

V_1 = Volume made up

V_2 = Volume of sample taken for estimation

W = Weight of sample taken for estimation.

RESULTS AND DISCUSSIONS

Amla were dried using two methods *viz.*, cabinet drying at a temperatures range of at 50°C, at 60°C, at 70°C respectively and open sun drying. The initial average moisture contents of amla were found to be 692.39 (% db) and 87.38 (% wb) respectively.

Table 1: Physico chemical characteristics of dried amla sample

Methods / Parameters	Cabinet drying			Open sun drying
	50°C	60°C	70°C	
Ash Content (%)	2.28	2.25	2.23	2.31
Protein content (%)	2.11	2.16	2.09	2.02
Fat content (%)	0.52	0.63	0.77	0.45
vitamin C (mg/100g)	608	598.5	589.7	576.3

CONCLUSIONS

Physico chemical characteristics of dried amla were found to be minimum in open sun drying as compared to cabinet drying method. Because, there are many technical problems like rain and cloudiness, contamination from outer sources and lack of control over drying conditions in open sun drying. Thus the Physico chemical characteristics of dried amla were found to be better in cabinet drying over the sun drying method.

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