

# Extraction of safflower yellow pigment (Carthimidin) and its fortification in Pedha

G.M. MACHEWAD, B.A. JADHAV, A.G. LAMDANDE AND P.V. WADKAR

Safflower is mostly cultivated for its petals; it produces red and yellow pigments. Carthamin (safflower yellow pigment) was used in pedha at 5 per cent and 10 per cent. The most accepted concentration of carthamin in pedha associated with overall quality of pedha is of 10 per cent. It is concluded from the present study that the pedha containing 10 per cent carthamin was found better than 5 per cent carthamin added pedha and control sample.

**Key Words :** Carthamin, Fortification, Pedha

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## INTRODUCTION

Safflower is a small thorn like herb highly branched belonging to the family Asteraceae. The colors of safflower vary from whitish yellow to red orange and it is used in preparation of Ayurvedic medicines in India. Safflower is mostly cultivated in China for its petals. India is the largest producer of safflower (2 lakh tonnes) in the world along with highest acreage (4 lakh hectares). The Maharashtra and Karnataka are two leading and important safflower growing state mainly grown for dye (water soluble yellow carthamidin). The flower produces red and yellow pigments. Safflower petals contains about 30 per cent of yellow (Nagaraj and Devi, 2001) and 0.83 per cent red pigment (Kulkarni *et al.*, 2001). Carthamin is only chalkone type pigment suggested for coloring foods. It has wide application for coloring in food such as ice-cream, shrikhand, jelly, soup etc. It is a medicine for cardio-vascular disease, pain and swelling. It reduces the blood cholesterol level.

Pedha is khoa based heat desiccated milk based product. The quantity of pedha produced in India exceeds to any other indigenous milk based sweets using khoa as a basic material (Mahadavan, 1991). Pedha is a whitish yellow in colour and has a coarse grainy texture and flavor develops and its quality determined by chemical composition, body texture, appearance and microbial quality (Patel, 2006). The present study was done for the assessment of carthamidin (yellow pigment) in pedha.

## METHODOLOGY

Khoa, sugar and cardamom were obtained from Parbhani local market while safflower petals were collected from All India Co-ordinated Research Project on Safflower, Marathwada Krishi Vidyapeeth, Parbhani.

### Extraction of yellow colour from safflower:

Extraction of yellow water soluble pigment from safflower florets were carried out as per the method given by Fatahi (2008) (Fig. 1). This extracted pigment is incorporated into pedha (Fig. 2).

### Proximate composition of safflower petals:

Moisture, protein, fat, ash and crude fibre were determined by using AOAC (2005) method.

## MEMBERS OF RESEARCH FORUM

### Author for correspondence :

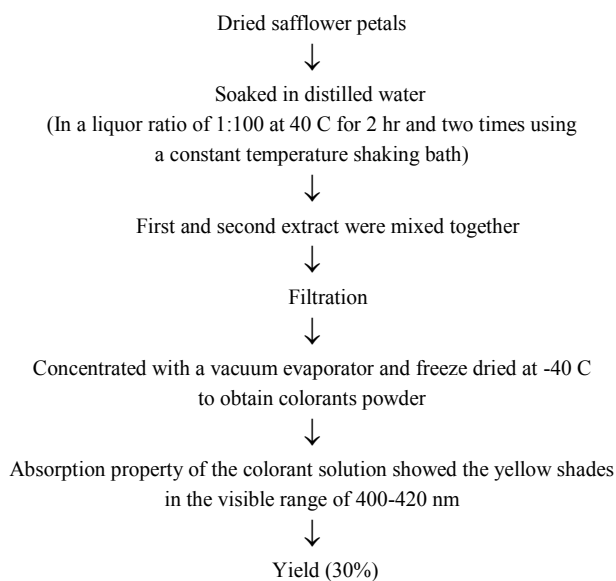
G.M. MACHEWAD, Department of Food and Industrial Microbiology, College of Food Technology, Marathwada Krishi Vidyapeeth, PARBHANI (M.S.) INDIA

### Associate Authors' :

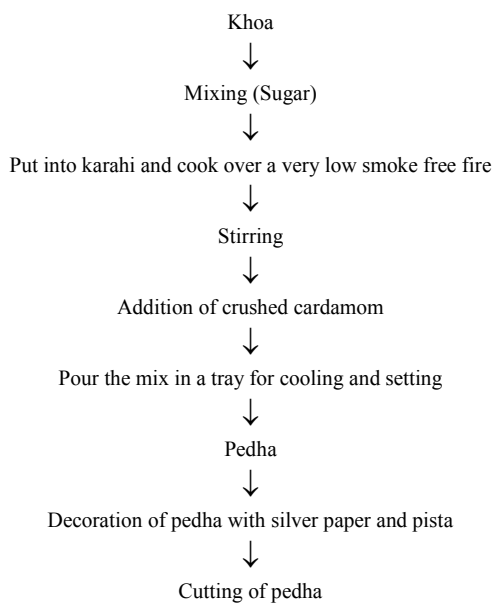
B.A. JADHAV, A.G. LAMDANDE AND P.V. WADKAR, Department of Food Chemistry and Nutrition, College of Food Technology, Marathwada Krishi Vidyapeeth, PARBHANI (M.S.) INDIA

**Flow sheet for extraction of yellow colour from safflower:**

Extraction of yellow water soluble pigment from safflower florets were carried out as per the method given by Fatahi (2008).



**Fig. 1.** Flow sheet for extraction of yellow colour from safflower



**Fig. 2.** Flow sheet for preparation of pedha

**OBSERVATIONS AND ASSESSMENT**

The present investigation was made to standardize incorporation of safflower yellow pigment in pedha to replace artificial colouring agent and optimize the level of pigment.

The data pertaining to proximate composition of pedha is given in Table 1. It is observed from the Table 1 that moisture

**Table 1.** Proximate composition of pedha

Sample	Moisture (%)	Protein (%)	Fat (%)	Sucrose (%)	Lactose (%)	Ash (%)	Acidity (%)
Control	13.6	19.1	19.6	30.6	16.5	1.2	2.4
A	13.7	19.9	19.0	30.4	15.8	1.24	2.2
B	13.8	19.2	19.3	30.9	16.0	1.22	1.6
S.E. ±	0.19	0.14	0.18	0.26	0.26	0.64	0.35
C.D. (P=0.05)	0.60	0.45	0.55	0.80	0.81	0.19	0.11

A: 5% carthamin added in pedha, B: 10% carthamin added in pedha

**Table 2.** Sensory evaluation of safflower petal fortified pedha

Sample	Colour	Taste	Flavour	Texture	Overall acceptability
Control	7.6	7.2	7.2	7.1	7.2
A	7.7	7.2	7.0	7.1	7.4
B	7.7	7.4	7.5	7.6	7.9
S.E. ±	0.23	0.23	0.25	0.28	0.22
C.D. (P=0.05)	0.67	0.68	0.74	0.82	0.64

Each value is average of ten determinations, A: 5% carthamin added in pedha, B: 10% carthamin added in pedha

content of control sample was found to be 13.6 per cent. The other parameters like protein, fat, ash and crude fibre were also determined.

The data depicted in Table 2 reveal that the sample B (10%) was found higher overall acceptability and better flavour profile. The addition of more yellow colour in the product has some safflower flavour. So, formulation was standardized on the addition of 10 per cent carthamin to the pedha by ten determinations.

#### Conclusion:

It was concluded that the most accepted concentration of carthamin (safflower yellow pigment) in pedha associated with overall quality of pedha was of 10 per cent. The pedha containing 10 per cent carthamin was found better than 5 per cent carthamin added pedha and control.

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