

Full Length Article

Nutritional potential of *Ficus racemosa* L. Fruits

Bhogaonkar P Y, Chavhan V N¹ and Kanerkar U R²

Dept. of Botany, Govt. Vidarbha Institute of Science and Humanities, Amravati (MS) India 444604.

¹Dept. of Botany, Arts, Commerce and Science College, Maregaon, Dist. Yavatmal (MS) India 445303.

²Dept. of Herbal Medicine, N.E.S. Science College, Nanded (MS) India 431605.

unmessh@gmail.com

ABSTRACT

Ficus racemosa L. is common along streams and riverbanks; also cultivated. Ripe receptacles eaten; taste like that of *F. carica* (Anjeer) fruits. Latex is used in Ayurvedic medicine, while wood used as timber. Unripe receptacles are boiled and used for vegetable preparation. Nutritional studies include quantitative estimation of crude protein, protein from nitrogen, lipids, ascorbic acid, phenols, anthocyanin, lycopene, carotenoids, chlorophyll, carbohydrate, starch, reducing and non-reducing sugars, crude fat and crude fibre in fresh as well as dry tissue. Ash studies were done for detection and estimation of minerals. Bioactive compounds possessing medicinal properties were also tested qualitatively.

Keywords: *Ficus racemosa*, Fruits, Bioactive molecules, Minerals.

INTRODUCTION

Ficus racemosa L. commonly known as Audumber or UMBER is found along streams and riverbanks; also cultivated in house yards and temple premises. Wood used as timber. Ripe receptacles eaten; taste like *Ficus carica* fruits. Unripe receptacles boiled and used for vegetable preparation. Various parts of plant like bark, leaves, tender shoots, fruits, seeds and latex are medicinally important. The bark contains tannin, rubber and wax [Anonymous, 2003]. Various plant parts are used in diseases of blood, vagina, uterus, leucorrhoea, gonorrhoea, burning sensation, diarrhea, dysentery, hemorrhoids and gastrohelcosis. The bark is used in inflammation, swellings of neck, gonorrhoea, scabies, mouthwash for toothache and for strengthening gums, and steeped freshly burnt bark has been said to cure cases of obstinate hiccup (Nair and Chanda, 2007). Krishnamoorthi *et al.* (2007) tested bark extracts of *F. racemosa* for anti-hyperglycemic and anti-lipidperoxidative activity in diabetic rats. They found oral doses to bring the blood glucose level to normalcy. Deshmukh *et al.* (2007) also have shown

the hypoglycemic effect of *Ficus racemosa* bark. Mahato and Choudhary (2005) reported the stem bark to have antibacterial activity. *Ficus racemosa* stem bark in addition has been shown to be potent antioxidant and radio-protector (Veerpur, 2007). The latex is used as anti-inflammatory and to treat hemorrhages (Nair and Chanda, 2007).

Fruits are useful in treatment of dry cough, loss of voice, diseases of kidney and spleen (Joseph and Justin, 2010). Fresh fruits are used as a source of dietary fibre. It exhibits more hypocholesterolemic activity than pure cellulose (Anonymous, 2003). Fruits are hypoglycemic and antioxidant (Abu Hasan *et al.*, 2011).

The fruit extract of *F. racemosa* is used to treat diabetes, leucoderma, aphrodisiac, menorrhagia and is also used to relieve inflammation of skin wounds, lymphadenitis, in sprains and fibrositis (Singh *et al.*, 2013). The bark is used as anti-hyperglycemic agent (Urooj and Ahmed, 2013). The extract of bark, leaves and fruits are used as antitumor, anticancer and as an antimicrobial agent (Kambali *et al.*, 2014).

MATERIALS AND METHODS

For analysis, fresh as well as dry material was used. Nutritional analysis was done following Thimmaiah (1999) and Sadasivam and Manickam (2005). Ash yield was estimated to know the mineral content. Ash was prepared at 550°C in muffle furnace. Iron, potassium, calcium, sodium and phosphorus were estimated quantitatively with flame photometer. The fruits were also tested for the presence of fifteen different bioactive compounds (Peach and Tracey, 1979; Harborne, 1973; Gibbs, 1974; Chabra *et al.*, 1984 and Evans, 1997).

RESULTS AND DISCUSSION

The values of nutrients and minerals obtained were converted into per 100 gm fresh weight of tissue, since these fruits are always eaten fresh (Table 1 & 2).

Gopalan *et al.* (2004) has reported nutritive values of some common Indian foods. To understand the nutritional status of *F. racemosa* studied here, the values obtained are compared with the values available for three related common fruit species used in Indian diet (Table 3). Protein,

carotene, ascorbic acid, phosphorous and iron content of *F. racemosa* fruits is more than *F. carica*, *F. religiosa* and *P. dactylifera*.

Protein value calculated from total nitrogen (N x 6.25) is much more than crude protein value since many nitrogenous compounds including free amino acids may be present. Also the value Nx6.25 had been determined for leguminous seeds 28.125 gm/100 gm Hock-Hin Yeoh and Yeow-Chin wee (1994) studied leafy vegetables have shown that the tradition factor 6.25 is not valid for leaf proteins. From present studies it is evident that the factor is also not valid for fruits like *Figs*. Same can be true here also. Mineral content was found 2gm/100gm which is near about equal to *Dates* and *Pipal figs*. Calcium was found to be 30.5gm/100gm which is more than *Dates*. Carbohydrates were found i.e. 15.84gm/100gm, which is near about similar to papal figs. *F. racemosa* fruits are richer in phosphorus and iron content. The carotene was found to be 200 µg/100gm, which is more than *F. carica* fruits. Ascorbic acid was found to be 5.3 mg/100gm, which is near about same as that of *F. carica* fruits.

Table 1: Nutrients contents of *Ficus racemosa* (Nutrients per 100 gm fresh tissue)

| | | |
|----|--------------------------------------|------------|
| 1 | Moisture content | 80.20 % |
| 2 | Crude protein | 1.475 gm |
| 3 | Protein (N x 6.25) | 28.125 gm |
| 4 | Total lipids | 7.58 % |
| 5 | Ascorbic Acid | 0.0053 gm |
| 6 | Carotenoids | 0.2 gm |
| 7 | Total Phenols | 1.025 gm |
| 8 | Anthocyanin | 0.6864 gm |
| 9 | Lycopene | 0.0848 gm |
| 10 | Chlorophyll | |
| | i) Chlorophyll – a | 0.00489 gm |
| | ii) Chlorophyll – b | 0.00613 gm |
| | iii) Total chlorophyll | 0.01102 gm |
| 11 | <i>Total carbohydrate</i> | 15.84 gm |
| 12 | Starch | 0.146 gm |
| 13 | Reducing sugar | 14.85 gm |
| 14 | Non-reducing sugar | 0.099 gm |
| 15 | Crude fat | 1.079 gm |
| 16 | Crude fibre | 0.544 gm |
| 17 | Minéral Content (turnes of Ashyield) | 2.632 gm |

Table 2: Minerals contents of *Ficus racemosa* (mg/100gm fresh tissue)

| S. N. | Elements | Qualitative | Quantitative |
|-------|------------|-------------|--------------|
| 1 | Sulphur | + | – |
| 2 | Calcium | + | 7.62 mg |
| 3 | Magnesium | + | – |
| 4 | Iron | + | 315 mg |
| 5 | Sodium | + | 329 mg |
| 6 | Potassium | + | 49.3 mg |
| 6 | Chlorine | + | – |
| 7 | Phosphorus | + | 1312 mg |
| 8 | Aluminium | + | – |
| 9 | Manganese | – | – |
| 10 | Copper | – | – |
| 11 | Nickel | – | – |

Table 3: Comparison of nutrient content of *Ficus racemosa* with other plant species

| Phytonutrients | <i>F. racemosa</i> | <i>F. carica</i> | <i>F. reliogiosa</i> | <i>P. dactylifera</i> |
|-----------------------|--------------------|------------------|----------------------|-----------------------|
| Moisture Content (gm) | 80.2 | 88.1 | 62.4 | 59.2 |
| Crude Fibre (gm) | 0.5 | 2.2 | 9.9 | 3.7 |
| Protein (gm) | 28.12 | 1.3 | 2.5 | 1.2 |
| Fat (gm) | 1.0 | 0.2 | 1.7 | 0.4 |
| Mineral (gm) | 2.0 | 0.6 | 2.3 | 1.7 |
| Carbohydrate (gm) | 15.84 | 7.6 | 21.2 | 33.8 |
| Carotene (µg) | 200 | 162 | NA | 26 |
| Ascorbic acid (mg) | 5.3 | 05 | NA | 03 |
| Calcium (mg) | 30.5 | 80 | 289 | 22 |
| Phosphorus (mg) | 103 | 30 | 89 | 38 |
| Iron (mg) | 250 | 1.0 | NA | 0.96 |

Nutrients per 100 gm fresh tissue

Ficus racemosa – **Umber***Ficus carica* – **Anjeer***Ficus religiosa* – **Pipal***Phoenix dactylifera* - **Dates**

Ficus racemosa fruits are reported to possess medicinal properties (Patil *et al.*, 2006). They are found to contain flavanones, catechol, triterpenoids, unsaturated steroids and polyurinooids. Flavanones and simple phenols like catechol present in the fruits impart anti-oxidant property. Presence of unsaturated steroids exhibit strong anti-inflammatory activity. Polyuronoids are demulcent and emollient. Richness in phosphorus and iron can make it a good support in combating anemia. Presence of good amount of carotene and ascorbic acid provides vitamin A and C. Overall *F. racemosa* fruits possess good nutritional potential and should be advocated in addition to figs

(Anjeer) and Dates. Presence of bioactive compounds further imparts them the status of health food.

There is vast difference between crude protein content and protein calculated from nitrogen 26.65 gm/100gm have shown that conventional conversion factor for protein estimation is not suitable for all materials since it has been determined for legume seeds.

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