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NUTRITIONAL LEVELS OF *INDIGOFERA GERARDIANA* WALL AND *CRATAEGUS SONGRICA* K. KOCH

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Abstract

In the present study, various physio-chemical parameters i.e. moisture, ash, fiber, protein, fats, oils and carbohydrates were determined in the whole plants samples of *Indigofera gerardiana* and berries of *Crataegus songrica*. The percent levels of moisture (4.8), ash (4.79) and fats (3.03) were higher in *Crateagus songrica* compared to the levels of moisture (3.06), ash (4.23) and fats (2.37) in *Indigofera gerardian*a. The % levels of protein (3.7) and fibers (17.8) were same in both plants while the level of carbohydrate (68.84) was higher in *Indigofera gerardiana* as compared to the levels of carbohydrate (65.88) in *Crataegus songrica*.

Introduction

The essential life nutrients are proteins, fat and carbohydrates. They contribute to caloric content of the dietary, minerals including trace elements, vitamins including trace elements, vitamins and water. Numerous studies in man have clearly demonstrated that life may be sustained by nutrient mixtures in which every component is definable chemically and soluble in water (Underwood, 1994). The quality and quantity of protein in the seed are basic factors important in the selection of plants for nutritive value, systematic classification and plant improvement programs (Siddique, 1998).

Most of the countries of the world have been facing malnutrition problems. The deficiency of protein in human food and animal feed is well recognized. The need of the good quality of proteins has been increasing due to rapid growth of population. It has been reported that in Pakistan the protein gap would continue to increase unless well-planned measures are adopted to tackle the situation. It is therefore imperative to increase protein production by utilizing all the available ways and means. In addition to increase in conventional production, a great deal of work has been done in recent years in developing new chemical and biological methods for the production of proteinaceous foods and feeds (Shah & Khalil, 1988).

As regards folkloric profile, the extract from the stem of *Indigofera gerardiana* is used for curing fungal diseases, skin ointments, fire wood, and fodder. Interestingly, it is also visited by honeybees (Hussain *et al.*, 2006). Similarly, *Crataegus songrica* is used as cardiotonic (Jun *et al.*, 2001).

Materials and Methods

Indigofera gerardiana (Papilionaceae) and *Crataegus songrica* (Rosaceae) were collected in August 2005 from upper Dir. They were pressed in newspaper. Papers were changed from time to time to absorb water from plants. Plants were identified after reference to the Flora of Pakistan (Ali & Qaiser, 2001).

Proteins, fats, oils, crude fiber, moisture content and ash value were determined by following official AOAC methods (Anon., 2000).

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Table 1. Nutritional analysis of the fruit of *Crataegus songrica*.

Plant part	Moisture	Ash	Fats and oils	Proteins	Fiber	Carbohydrate
Fruit	4.8	4.79	3.03	3.7	17.8	65.88

Table 2. Nutritional analysis of the whole plant of *Indigofera gerardiana*.

Plant part	Moisture	Ash	Fat and oils	Proteins	Fiber	Carbohydrate
Whole plant	3.06	4.23	2.37	3.7	17.8	68.84

Results and Discussion

Results associated with selected parameters for both plants are listed in Tables 1 and 2. The moisture content in *Crataegus songrica* fruit is 4.8% and ash value found to be 4.79%. Fats and oils contents present are 3.03%. Crude fiber is 17.8% while carbohydrate is 65.88%. Protein present in the fruit is 3.7%. In a study conducted by Read (1946), the percent contents in *Crataegus songrica* were as ash (0.79%), protein (0.44%), fats (1.03%), carbohydrate (22.1%). Read (1946) also reported that in *Sanuisorba minor* protein (5.65%), fats (1.23%), ash (1.72%), carbohydrate (11.0%) and water (74.5%) were estimated.

The moisture content in *Indigofera gerardiana* is 3.06% and ash value found to be 4.23%. Fats and oils present to be 2.37%. Gupta (1962) reported water (9.3%), albumenoids (34.3%), carbohydrate (43.4%), oil (3.0%), fiber (6.5%) and ash (3.5%) in *Indigofera linifolia*. Crude fiber is 17.8% while carbohydrate is 68.84%. Protein present in the fruit is 3.7%. Irvine (1992) reported carbohydrates, fats and ash in *Polygonum hydropiper*. According to Naseem *et al*., (2006) the percent levels of various ingredients in *Crotalaria burhia* were as carbohydrate 7.16 (2.55 reducing and 4.61 non-reducing), starch contents 5.45, crude fibers 27.2, crude fats 6.36, moisture 63.10 and ash 5.67.

Whole plant of *Indigofera gerardiana* is used for hepatitis, whooping cough (Shinwari *et al.,* 2006); antispasmodic, tonic; the extract prevents the development of hypoglycemia in the mouse; the leaves, flowers and tender shoots are cooling and demulcent. They are used in the form of leprosy and cancerous infection; the leaves are applied to abscesses. The roots are chewed in toothache and aphthe (Gamble, 1972). The alcoholic extract of the dried shoots is reported to possess anti–inflammatory activity; the root bark is chewed to relieve the abdominal pain; leaves, bark and roots have anti-bacterial activity (Esimon *et al*., 1999; Umar, 1999).

The liquid extract of the flowers and fruits of *Crataegus oxycantha* are used as heart tonic, improves blood flow in the coronary arteries and used in functional diseases of the heart, such as dysproea, hypertrophy, uvular insufficiency and heart oppression, arteriosclerosis and angina pectoris (Anon., 2003). The plant is reported to be astringent, nervine sedative, stomachic, hypertensive and possess antispasmodic properties (Pullaiah, 2006; Anon., 2001). The drug relaxes the uterus and intestine but constricts the bronchi and coronary vessels (Anon., 2003). The fruits are used as a popular remedy for diarrhea or slight phlegmasia (Bhattacharjee, 2004). The macerated oil shows antifungal activity (Anon., 2001). It may be used as tincture. Both flowers and berries are known to act as diuretic and can be used to treat kidney related problems and dropsy (Foster & Duke 1990).

Our current investigations on nutritional evaluation of *Indigofera gerardiana* and C*rataegus songrica* have revealed that these plants are good source of nutrients (proteins, fats, carbohydrates, fiber and minerals) and can be used as substrates deficit in either of these nutrients.

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