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Determination Of Total Protein Conents from Medicinal Plants (Zygophyllaceae) Famaily Found in Pakistan

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Abstract: Present worked determined Total protein contents analyzed from different four medicinal plants Zygophyllaceae family growing in Sindh, Pakistan (including *Tribulus terristris L, Zygophyllum simplex L., Fagonia cretica L.,and, Peganum harmala L.*,from different parts of plant (i.e. flower leave, stem, root and seed) ,were subjected for the analysis of Total protein contents, seed proteins from plant for wide biotechnological applications. different parts of four plants (i.e. flower leave, stem, root and seed), *Zygophyllum simplex L.* was highest in seeds ranging from 26.11 %, and lowest in Roots11.10 %, *Tribulus terristris L.* indicated highest in seeds ranging from 23.30% and lowest in stems 9.13 %, *Fagonia cretica* was highest in seeds ranging from 20. 00% , and lowest in stems 8.14 % , *Peganum harmala L.*was highest in seeds ranging from 17. 20 % , and lowest in Roots 9.40 % as established by kjeldhal method. Protocol of ISI-24-1-e, was under of etermination of total nitrogen, which was calculated using a nitrogen conversion factor of 6.25. Therefore, the main object of the present investigation was result of different levels of total protein contents present in these medicinal plants belong to Zygophyllaceae family and also search for high quality and cheap sources of plant protein. People in developing countries depend mostly on plant protein sources to increase the ease of use proteins in their diets, seeds are a good source of high-quality proteins that could be obtain from the seed meal and use as functional ingredients in various food materials**,** Medicinal plants have bioactive compound which are used for remedial of different diseases and moreover play a vital role in curing. Plant foodstuff one of the most important factors that enhance plant produce. Nitrogen is the large amount in plant for its presence in the constitution of the protein molecule.

Keywords: Medicinal plants, Total protein, Zygophyllaceae**.**

1. INTRODUCTION

At present, approximately all Aayurvedic and a variety of allopathic drug can be search out from plants; and in addition from the roots, stem, aerial branches, leaves, flowers, fruits, seeds and barks. The medicinal plants have been of huge significance to mankind in reducing many diseases from prehistoric time.

Peganum harmala L. is commonly well-known as Harmal, used for healing wounds, diarrhea and digestive disorders (Marwat *et al.,* 2008), Seeds are used in asthma, paralysis, anthelmintic, and hemorrhoidsm, along with olive oil for ear problems (Shah *et al.,* 2006). Antifungal activity of *P. harmala* of *Candida* and *Aspergillus*, recently reported antibacterial activities of different parts of *P. harmala* as well as seed, root, flower, leaf and stem have been examined and evaluate. Anti fungal activity of *P. harmala* seeds extract is chiefly associated to harmaline (Diba *et al.,* 2011, Darabpour *et al.,* 2011, Abdel-Fattah *et al.,* 1995).

Recently reported work *of Fagonia indica Burm* isolated a quantity of bioactive component from the plant as well as flavonoids, sterols and tritepenoids (Rasool *et al.,* 2014).

Fagonia cretica L. growing in dry environment throughout Pakistan and is commonly called Dhaman, *F. cretica L* also groing in Sindh, which used as a cure of snake bite, fever, dysentery, asthma, liver, stomach, typhoid, toothache, skin infection, cancer and blood clean (Marwat *et al.,* 2008;Hussain, 2007; Akhtar 2009). *F.cretica L.* used for typhoid, liver trouble, tooth ache, bronchitis, and dysentery, urinary discharges barks and root is used for scabies. (Baquar, 1989). *Zygophyllum simplex* seeds are anthelmintic; useful to the eyes in ophthalmia and glucoma skin diseases, ear pain (Khan.1997) high salinity tolerance at the growth stage (Khan, 2003).

Tribulus terrestris L. is commonly known as Gokhru. Fruits are used in urinary bladder, leaves in colic and chronic cough (Marwat, *et al.,* 2008; Khan, 2009). In recent years reported that the defensive result of *Tribulus terrestris* for streptozotocin influence diabetic rats may possibly be mediate by reduce oxidative pressure. (Amin. *et al.,* 2014***)*** and other scientist recently reported the chemical constituents of *Tribulus terrestris* are medicinally significant, such as alkaloids flavonoids, flavonol glycosides, central nervous system, steroidal saponins, analgesic, antispasmodic, anticancer, antibacterial, anthelmintic, larvicidal, anti-inflammatory and also used for cure of different type of infection (Chhatre et a l2014) and also used for urinary diseases, gonorrhoea and painful maturation and inflammatory conditions of genito-urinary system (Gauthaman 2002, Khan, 2004).

Different chemical compounds present in aerial parts of *Zygophyllum simplex*; flavonoids; flavonol glycosides; isorhamnetin 3-glucoside; and 2-butenoate

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ester leaves and fruits contain kaempferolis present in fruits and leaves extract act as a skin purifier. **(**Hassanean 1992). Recently published in research report of Zygophyllaceae family plants in a previous research work: isolated and identified in different scientist a number of bioactive metabolites *Tribulus terrestris* discovered many chemical compounds, among which the best known are steroidal glycosides (saponins) and alkaloids researchers are still discovering new substances which belong to the family of steroidal saponins, glycosides, alkaloids and flavonoids. The majority of those compounds have not been identified earlier by chemists; therefore, their new specific names come from the name of the plant (terrestribisamide, tribulusterine,terrestrosin (Chhatre *et al.,* 2014). *Peganum harmala L.* chemical constituent present in defensive effects, hasmine and harmaline against human lipoprotein oxidation and analgesic effect (*Berrougui* 2006, *Farouk* 2008). Current information about *Peganum harmala L* have anti-tumor effect, leukemic healing, hypoglycemic effect, anti-inflammatory, antitumor and cytotoxic activity among others. Moreover, it have been reported that this plant have antibacterial, antifungal and antiviral effects.used in traditional remedy for the release of pain and as an antiseptic agent, antibacterial, antifungal, antiviral, antioxidant, antidiabetic, (Asgarpanah 2012).

2. MATERIALS AND METHODS

Collection of plant samples: The different parts of four plants of Zygophyllaceae family viz:*Fagonia cretica L., Peganum harmala L., Tribulus terrestris L. Fagonia cretica L. Zygophyllum simplex L.,* (Zygophyllaceae), were collected from different areas of Sind.

The different parts of plant were also collected from Hamdard University Karachi with the help of Prof. Dr. Usmanghani Khan all plants verities are also cultivated in Sindh, Pakistan), during June and August, Flowering season (2010- 2011) reference sample were identified through Flora of Pakistan (Ali, 1972). The collected plant material was washed with tap water followed by distilled water and dried in shade at room temperature for 15-20 days (Khanzada *et al.*, 2008a, 2013).

Total protein analysis by kjeldhal method: The sample was digested in H_2SO_4 (30 ml) in the presence of catalyst $CuSO_4$ (1g) and K_2SO_4 (10g), after digestion Sodium hydroxide (NaOH, 33%) was added followed by steam distillation, the distillate was collected in 20 ml boric acid (4%). Then nitrogen content was determined by using titration with HCl (0.01N). A factor of 6.25 was used to evaluate total protein contents (Khanzada *et al.,* 2008.a.b, 2013).

Total protein analysis: Protocol of ISI-24-1-e, was found determination of total nitrogen, which was calculated using a nitrogen conversion factor of 6.25 (Khanzada *et al.,* 2008.a.b, 2013).

3. RESULT AND DISCUSSION

Four plants of Zygophyllaceae family viz: *Fagonia cretica L. Tribulus terristris L., Zygophyllum simplex L. Peganum harmala L.* were selected for their total protein information.

Zygophyllaceae family growing in Sindh, Pakistan (including *Tribulus terristris L, Zygophyllum simplex L., Fagonia cretica L.,and, Peganum harmala L.,* were subjected for the analysis Total protein contents, seed proteins from plant for wide biotechnological applications. different parts of four plants (i.e. flower leave, stem, root and seed) of Zygophyllaceae family, *Tribulus terristris L* was highest in seeds ranging from 23 .30% Seeds, leaves 15. 00 %, flowers 11.60 %, Roots 10.30 % and lowest in stems 9 .13 %, *Zygophyllum simplex L.* was highest in seeds ranging from 26.11 % Seeds, flowers 17.28 % , leaves 15.14 % stems 13.40 % and lowest in Roots11.10 %, *Fagonia cretica* was highest in seeds ranging from 20. 00% Seeds, leaves 13.20 %, flowers 11.45 % Roots10 .30 % and lowest in stems 8.14 % , *Peganum harmala L.*was highest in seeds ranging from 17. 20 % Seeds, stems 15.24 % ,flowers 13. 00 % leaves 11.15 % and lowest in Roots 9.40 % as established by kjeldhal method Zygophyllaceae

The hightest protein in *Fagonia cretica L.* (11.20 %) and lowest protein percentage present in *Zygophyllum simplex L.* (8.48 %), Protein value of *Fagonia arabica* in defferent part of plant (leaves/seeds) 1.43 % by Anwar, A. 2002, and while present worked showing that 11.20% protein value in *Fagonia critica L.* Seeds have the highest concentration of Protein 20. 00% highest protein is found to be abundant in fruits and seeds of *Tribulus terristris L.,* 17.30 %, *Peganum harmala* L. plants11.20%

The literature review showed that saponins exhibit anticancer and antineoplastic properties (Ngoci *et al.,* 2011. Dastagir *et al.,* 2014). Alkaloids are chemotherapeutic agents (Olaleye 2007; Rizwana *et al.,* 2010) and they interfere with cell division. Result of phytochemical screening exhibited that saponins, alkaloids and glycosides were detected in the studied plants of family Zygophyllaceae. Oils were also found in *F. cretica, P. harmala* and *Tribulus terrestris*. The phytochemicals detected in the studied plants might be responsible for the death of brine shrimps. protein from the seeds of *Peganum harmala*. SDS-PAGE pattern of the purified protein from the seeds of *Peganum harmala* L. The protein appeared as a single band with an estimated molecular mass of 15 kD have been previously described (Soliman, 2011).

If we compared previously reported research work in different medicinal plants parts protein from *Calotropis procera* protein (7.87-14.63% the highest total protein was reported in *Calotropis procera* in leaf extracts 23.94, stem 8.94, bark 12.69 (Kalita *et al.,* 2004). Watermelon seed protein the high-quality dietary and determined property of proteins, such as used in food formulations property recently reported by (Ali Abas Wani 2011) Total protein contents in seeds of *Pithecellobium dulce Benth* .the ranged between 67.11, while stems, roots and leaves contains, 15.72%, 10.58% and 13.75% correspondingly and flowers and fruits 14.76% and 10.50% seeds of plant *Pithecellobium dulce Benth* are rich sources of protein. (Khanzada et al 2013). In *Calotropis procera* of Sindh, the highest value of total protein recorded was 50.80% of dry weight (Daulatpur), 32.11% (NawabShah), 25% (Hyderabad) and (Jamshoro), and 29.45% from different sites (Khanzada *et al.,* 2008.b).

The total proteins in cereal grain significant impact on their dietary value for humans and animals and on their useful properties in foodstuff processing (Shewry PR 2002). The previously reported work the total protein contents isolated from leaves and flowers of *Tamarindus indica*: Jamshoro 15.6%, Nawabshah Distt, 10.8%. Hyderabad Distt, 8.7% (Khanzada *et al.,* 2008.a) compared to work with other scientist in same plant protein *T. indica* 14% (Arinathan *et al.,* 2003). Seed protein 6.9% (M**.** Pugalenthi *et al.,* 2004). In *Calotropis procera* of Sindh, the highest value of total protein recorded was 50.80% of dry weight (Daulatpur), 32.11% (NawabShah), 25% (Hyderabad) and (Jamshoro), 29.45% from different sites. If compared, whole plant portion *Calotropis procera* protein (7.87-14.63% the highest total protein was reported in *Calotropis procera* in leaf extracts 23.94, stem 8.94, bark 12.69 (Kalita *et al.,* 2004).

This technique could improved be also used for inter species specific diversity and phylogenetic or evolutionary relationships among various species or genera. Plant proteins should have desirable functional properties and provide essential amino acids for their utilization in different food systems (Wang 1976). 80% of the proteins are supplied by plants, which are nutritionally important for community (Tangadurai et al. 2001a).Total protein in *Calendula officinalis L.* flowers is reported from seed 30.20 %. (Khanzada *et al.,* 2014)**.** Nowadays, modern pharmacology is support usually on synthetic chemical compounds..

Plant foodstuff one of the most important factors that enhance plant produce. Nitrogen is the large amount in plant for its presence in the constitution of the protein molecule. (Jones *et al.,* 1991)**.**

Previously reported in sequence concerning position of seed protein quality enhancement by genetic engineering, the important helpful guideline of seed protein gene appearance and incomplete success in improving the nutritional quality about of some improved seed crops. (Surekha *et al.,* 2000).

4. CONCLUSION

During this study the family Zygophyllaceae determined the highest total protein was present in *Zygophyllum simplex L* plant seeds 26.11 %. Protein content is contribute to the formation of hormones which controls a variety of body functions such as growth, repair and maintenance of body protein (Mau *et al.,*1999). The quality and amount of protein in the seed are fundamental part significant in the variety of plants for nutritional value, organized categorization and plant development plan (Siddique, 1998). The quality and quantity of protein in the seed are basic factors in the selection of plants for nutritive value, systematic classification and plant improvement programs (Siddique, 1998).As we can see from the above data that there is a huge difference among the four plants of Zygophyllaceae family growing in Sindh, Pakistan. All the above mentioned differences were observed among these medicinal plants, may be due to seasonal variation as well as different ecological conditions in which they are growing region e.g. soil, temperature, climatic factors, environmental parameters and various ecological conditions were present in these differences.

Table 1. Total Protein Contents of medicinal Plants Found in Sindh Pakistan Zygophyllaceae family

Plants Name	**Common Name**	**Parts**	**% Protein Dry weight**
Tribulus terristris L.	Land caltrop	Seeds	23 .30 %
		Flowers	11.60 %
		Leaves	15. 00 %
		Stem	9 .13 %
		Roots	10 .30 %
Plants Name	**Common Name**	**Parts**	**% Protein Dry weight**
Zygophyllum simplex L.	Simple zygophyllum	Seeds	26.11 %
		Flowers	17.28 %
		Leaves	15.14 %
		Stem	13.40 %
		Roots	11.10 %
Plants Name	**Common Name**	**Parts**	**% Protein Dry weight**
Fagonia cretica L.	Cretan prickly clover	Seeds	20. 00%
		Flowers	11.45 %
		Leaves	13.20 %
		Stem	8.14 %
		Roots	10 .30 %
Plants Name	**Common Name**	**Parts**	**% Protein Dry weight**
Peganum harmala L.	Hermal Esf and,	Seeds	17. 20 %
		Flowers	13. 00 %
		Leaves	11.15 %
		Stem	15.24 %
		Roots	9.40 %

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