

Comparative analysis of primary metabolites of medicinal plants

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Plants have been used for the treatment and cure of many diseases and physical ailments because of their therapeutic properties. These plants are designated as medicinal plants. The goal of the present work was to estimate primary metabolites such as protein, total phenols, lipids, chlorophyll and soluble sugar in the leaves of different plant species such as *Azadirachata indica*, *Ocimum sanctum* and *Mentha arvensis*. Higher amount of soluble sugar was observed in the *Mentha arvensis i.e.* 24 per cent. Highest content of chlorophyll was observed in leaves of *Azadirachata indica i.e.* 1.64 per cent. Maximum amount of Protein was estimated in *Mentha arvensis i.e.* 27.80 per cent. Highest amount of Lipids was calculated in *Azadirachata indica i.e.* 0.024 per cent. Maximum amount of Phenols was found in *Mentha arvensis i.e.* 1.013 per cent.

Key words : Protein, Total phenols, Lipids, Chlorophyll, Soluble sugar

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The plants that possess therapeutic properties or exert beneficial pharmacological effects are generally designated as medicinal plants. A medicinal plant is any plant which, in one or more of its organ, contains substance that can be used for therapeutic purpose or which is a precursor for synthesis of useful drugs (Dhuley, 1998).

Plants, as extracts and in various other forms, are being used for centuries in different traditional system of medicine for the treatment of human ailments, particularly those caused by pathogenic bacteria, fungi, as well as virus. Presence of various compounds and their uses has extensively been emphasized by number of workers (Dougal, 1981; Collins, 1987). Progress in medicinal plant research has undergone a phenomenal growth during last two decades. Worldwide trend towards the utilization of natural plant remedies has created an enormous need for information about the properties and uses of medicinal plants as antitumour, antianalgesic, insecticides, rotenoides etc. (Fischhof *et al.*, 1996). Recently, the World Health Organization (WHO) estimated that 80 per cent of people rely on herbal states, increasing public dissatisfaction with the cost of prescription medications combined with an interest in returning to natural or organic remedies, has led to an increase in the use of herbal medicines. In Germany, roughly 600 to 700 plant based

medicines are available and are prescribed by approximately 70% of German physicians. The goal of present work is to analyze primary metabolites which are directly concerned with metabolic processes like respiration, photosynthesis, protein, lipid synthesis. Laboratory evaluations were made to assess the comparative study of primary metabolites of some medicinal plants. In this study five primary metabolites (sugar, protein, lipid, chlorophyll and phenol) have been isolated from the leaf extracts of three medicinal plants *viz.*, *Azadirachata indica*, *Ocimum sanctum* and *Mentha arvensis*.

In the proposed work different species were collected from the Nursery of School of Forestry and Environment, Sam Higginbottom Institute of Agriculture, Technology and Sciences, Allahabad. Fresh leaves were washed and dried in an incubator at 37°C and made its powder. This powder was used for further analyses of total soluble sugar and chlorophyll (Sadasivam and Manickam, 1992), protein (Lowry *et al.*, 1951), total lipids (Bligh and Dyer, 1959), total phenols (Bray and Thorpe, 1954).

Higher amount of sugar was observed in the *Mentha arvensis i.e.* 24 per cent followed by *Ocimum sanctum i.e.* 9.78 per cent as compared to other plants while lowest was obtained from *Azadirachata indica i.e.* 6.8 per cent. Highest

Metabolites	Name of plant		
	Azadirachta indica	Ocimum sanctum	Mentha arvensis
Total soluble sugar (%)	6.8	9.78	24
Protein (%)	5.28	2.82	27.80
Total phenol (%)	0.46	0.68	1.013
Lipids (g)	0.024	0.011	0.002
Chlorophyll (mg/g)	1.64	0.65	0.037

content of chlorophyll was observed in leaves of *Azadirachata indica* i.e. 1.64 per cent followed by *Ocimum sanctum* i.e. 0.65 per cent while lowest was obtained from *Mentha arvensis* i.e. 0.037 per cent. Maximum amount of protein was estimated in *Mentha arvensis* i.e. 27.80 per cent followed by *Azadirachata indica* i.e. 5.28 per cent and lowest was obtained from *Ocimum sanctum* i.e. 2.82 per cent.

Highest amount of lipids was calculated in *Azadirachata indica* i.e. 0.024 per cent followed by *Ocimum sanctum* i.e. 0.011 per cent and lowest was obtained from *Mentha arvensis* i.e. 0.002 per cent. Maximum amount of phenols was found in *Mentha arvensis* i.e. 1.013 per cent and followed by *Ocimum sanctum* i.e. 0.68 per cent while lowest was found from *Azadirachata indica* i.e. 0.46 per cent (Table 1).

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