

As Medicinal and Chemical use of Plant Extracts in many Efficient Chemical Moity and it's Metabolites Estimation

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ABSTRACT

Different species of cassia found in Allahbad are consumed as daily vegetables have high nutritional value. Most of them are underutilized and display varied ethno medicinal values. The work was carried out with an aim to document three ethno medicinal properties of three different species of Cassia, Cassia fistula, Cassia siamea and Cassia ovata. The documentation was done among 100 tribal people residing in the area near U. P & M. P. border area. The knowledge revealed that the three plants were used in almost every tribal houses as a dietary supplement and various medicinal uses. According to the Munda Vaidya's the plant Cassia is of pitta nature and its different part have different uses. The root is used against tuberculosis glands, diabetes, as a tonic, the root and bark paste mixed in equal amount is used against snake bite. Traditionally it is used as laxative, for the treatment of leprosy and various skin disorders. The present study aimed to screen and quantify primary and secondary metabolite by quantitative and qualitative method. The pigments (chlorophyll and carotenoid) were characterised by UV visible spectroscopy. Concentration of chlorophyll-a, chlorophyll-b and carotenoid was calculated by Arnon method (80% acetone extract). The spectrophotometric study of the different pigment of the three species of Cassia, Cassia fistula (chl-a 254.516, chl-b 305.741, total chl 533.7 carotenoid 10.6), Cassia siamea (chl-a 257.88, chl-b 393.16, total chl 630.2 carotenoid 9.395), Cassia ovata (chl-a 266.36, chl-b 271.96, total chl 538.32 carotenoid 16.3). The result revealed that chl-a was highest in Cassia ovata followed by Cassia siamea and Cassia fistula. Chl-b pigment followed C siamea > C fistula > C tora pattern, total chl C siamea > C ovata > C fistula and the carotenoid amount C ovata > C fistula > C siamea. In screening of secondary metabolites tannin, saponins alkaloids, terpenoids, resin Phyto-sterols were carried out on the aqueous extract showed +ve test for all except phyto-sterols and on the powdered specimen gave -ve result in aqueous ethanol as well as acetone extract.

Keywords- Acetonic extracts, Alcoholic extracts, chlorophyll pigment, chlorophyll b. Carotenoids metabolites.

I. INTRODUCTION

Number of medicinal systems is directly or indirectly dependent on plants nutraceuticals, food supplements, folk medicines, traditional systems of medicine, modern medicines, and pharmaceutical intermediates (Deori et al., 2007). Medicinal plants are used for the treatment of many diseases. In nature number of medicinal plants are naturally grown and has relied on the vast variety of natural chemistries' found in plants for their biochemical and therapeutic properties (Seyyednejad and Motamedi, 2010). Medicinal plants are not having the pharmaceutical approach, but there is a wider and diverse tendency to utilize herbal plant product to supplement the food, diet, and its main intense is to improving the quality of human as well as animal life and preventing the number of diseases (Ghosh and Sahu, 1986). U. P & m. P. Border are a region is land of nature transversed by plateaus and steeps with undulating valleys and is inhabited by about 23 ethnic groups of indigenous people (Keshari, 1983) with strange faith and practices which is associated with the local flora of the region. The rich and the vivid flora of the state acts as a substitute of nutrient supplement to the tribal. (Ghosh, 1971). The simple home remedies practised especially by the Adivasi and the Adi Janjatis or the tribal communities all over India have been the Ayurveda system later developed by the Aryans. The simple system of and are used throughout the history of human beings either in the form of plant extracts or pure compounds against various diseases (Dabryial and Narayana, 1988). Knowledge about these plants are passed from one generation to the other through folk tale (Ghosh (1971). The medicinal herbal plants popularly known assaag or potherbs are beneficial for therapeutic uses as well as for curing of human diseases because of the presence of phytochemical constituents (Kumar and Kumari, 2010). Saag is the distorted form of Sanskrit word Saak meaning potherb. In Indian cuisine saag generally occupies a special place

for both its taste as well as medicinal properties. Among the tribal of Jharkhand saags are as leafy laurels for the state is rich in varieties and different species of saag are essential part of the festivals and rituals (Singh et al., 2001). Some potherbs or saags are cultivated but most of them grow wild and are underutilized. Phytochemicals are naturally occurring in the medicinal plants, leaves, seeds and roots that have defence mechanism and safeguard from numerous diseases. (Oudhia, 2001). Phytochemicals are primary and secondary compounds (Porra et al., 1989). Saags or the pot herbs are rich in a wide variety of metabolites, which have anti-fungal, anti-bacterial. The primary metabolite like chlorophyll, amino acids, nucleotides (Markwell, 2002), simple carbohydrates or membrane lipids, play predict ale roles in photosynthesis, respiration, solute transport, translocation, nutrient assimilation and differentiation (Yen and Chung, 1999). Chlorophylls green colouring pigment is a primary metabolite that give the colour to the leaves. The spectral properties of chlorophylls are essential in harvesting light energy and in the transduction of absorbed light energy for photosynthesis. The variation of leaf colour, photosynthetic activity in most of the plants dependent on chlorophyll concentration. (Shibghatallah, 2013) Chlorophyll content determines the photosynthetic capacity of the plant per unit area of leaf, stress and nutritional deficiencies. (Vimala and Poonghuzhali, 2015) Secondary metabolites are synthesized by the plants as part of the defence system of the plant (Indira et al., 2015). Higher plants contain Chl-a, Chl-b, accessory pigments and several additional forms of chlorophyll (Campeanu and Neata, 2012). The Chl-a and Chl-b are the best known among five main types of chlorophyll and are most commonly found in all autotrophic organisms except pigment containing bacteria. (Devlin & Witham 1997). Both Chl-a and Chl-b pigments are associated with light harvesting processes (Butnariu, 2016), which are solely responsible for photosynthesis in higher plants. Chlorophyll concentration in leaves is an indicator of plant health. The chlorophyll a:b ratio also indicates the developmental state of photosynthetic apparatus in plants. It has a determinative role in growth and development of higher plants (Wakefield and Bhattacharjee 2016). The chlorophyll content also indicates the photosynthetic capacity per unit area of the leaf (Kozłowski et al. 1991) that determines the rate of photosynthesis in the plant (Dickman & Kozłowski 1968). Determination of chlorophyll content as an indirect method of estimating

the productivity also provides a good understanding of the photosynthetic regime of plants (Costache et al., 2012). The chlorophyll content increases with leaf development and then decreases with the senescence phenomenon (Pereyra et al., 2014). The rate of photosynthesis is also higher in flowering and fruiting branches of sub-tropical fruit species in comparison to non-fruiting branches (Avery, 1977). However, the pigment is a factor that might also be responsible for the colour variation of leaf as well as the nutritional in different Cassia species. Chlorophyll concentration in leaves is an indicator of plant health (Iqbal et al., 2015).

II. CONCLUSION

Documentation of the use of three species of cassia suggests that there is immense potential of the three species of cassia to be used as an ethno-medicinal plant and the cultivation of these plant, can be promoted for commercial purpose. The study has revealed that chlorophyll a ranges from 254.516 to 266.36 mg/ml. Chlorophyll b. Ranges 271.96 to 393.16 micrograms/ml. Total chlorophyll a plus b. Ranges from 533.70 to 630 micrograms/mm. From ethanolic extracts test of alkaloid screening of secondary metabolites has been completed. Test of phyto-steroid, test of resin and test of tannin are completed in presence of sulphuric acid and ferric chloride. Cassia species above discussed called as group of golden flowers.

REFERENCE

- [1] A water soluble polysaccharide isolated from cassia ovata, PG. 384-386, Carbohydrate research (1990) by; Pramod Kumar
- [2] Campeanu G and Neata G (2012) studies concerning the extraction of chlorophyll and total Carotenoids from vegetables, Romanian iotechnological Letters 17(5):7702-7708
- [3] Costache M, Campeanu GH, Neta G (2012) studies concerning the extraction of chlorophyll and total Carotenoids from vegetables. Romanian Biotechnological Letters 17(5):7702-7708.
- [4] Dab riyal RM, Narayana DBA (1998) Ayurveda Herbal Raw Material, The Eastern Pharmacist: 31-35.
- [5] Deori C, Begum SS, Mao AA (2007) Etnobotany of sujen- A local rice beer of Deori tribe of Assam.
- [6] Devlin RM and Witham FH (1986) plant Physiology (Eds 4) . CBS publishers & Distributors, New Delhi, India.