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Milkweed - A Potential Sustainable Natural Resource

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ABSTRACT: Common milkweed (Asclepias species) is an invasive 'super species' that has invaded extensive areas in Europe, forming novel ecosystems. The milkweed plant can tolerate to almost any soil conditions like swampy, moist, sandy and arid. It is a perennial plant and it does not require replanting, fertilizers to making the plant sustainable. Successful commercialization of milkweed as a crop is dependent upon mechanized harvesting, handling and drying. However, the effects of common milkweed on native flora more generally are unknown. In the ancient times, the plant was used for its curative properties. This plant was extensively used for the treatment of various ailments such as tumor, asthma, fever, homeostasis, inflammation, diarrhoea and warts. It consists of various chemical constituents including Flavonols, Flavonol glycosides, Amino acids, Carbohydrates, Triterpenes and Cardenolides. The plant parts which lend themselves to possible commercial utilization are the seeds, with its high content of proteins and oils, the latex with its rubber content and finally the long bast fibers of the stem tissue. Interest in the possibilities of this plant has been aroused from time to time especially from the standpoint of rubber production. One study has reported neutral effects of common milkweed on the native flora of sand dune grasslands in Hungary after the removal of invasive pine plantation. This paper gives comprehensive information about the history of the milkweed plant, fibres and a step ahead to open a new insight for its therapeutic efficacy.

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INTRODUCTIONS:

Milkweed is an herbaceous, tall perennial that got its name for its milky sap that contains latex, alkaloids and other compounds. Carl Linnaeus, Swedish botanist (1707-1778), named the genus after Asclepius, the Greek god of healing because of the many folk-medicinal uses for the milkweed plants [1,2].

The plant is native to South America but has become a naturalized weed in tropical and subtropical areas and distributed throughout the world. This plant contains Flavonols, flavonol glycosides, amino acids,

carbohydrates, triterpenes, and cardenolides were isolated from plants [2,3].

The roots were used as a cheaper alternative to Ipecacuanha as an emetic. It is also used as purgative, homeostatic in bleeding wounds and haemorrhoids, for treatment for gonorrhoea, inflamed spleen, pneumonia, cancer, fever and pyoderma. Entire plant is dried and decocted as a cardiac tonic, for tonsillitis, urethritis and external and internal bleeding. The value of any plant obviously is dependent upon the adaption of its various parts to some useful application. In the case of milkweed, the attention must be focused upon the possible products associated with the seed, with the stem tissue and with the coma [3,4].

Fig 1. The milkweed plant of Asclepias species.

Fig 2. The flowering stage of milkweed plant.

The plant is toxic in nature and contains a number of potent cardiac glycosides. The signs of toxicities included vertigo, vomiting, diarrhoea, stomach cramps, pallor chills and arrhythmia. The traditional remedy for toxicity is by inducing emesis with egg white [4].

The following study was undertaken with the cognizance that the most progress could be made in determining the potential value of the milkweed plant only through a study of the entire plants and a number of its products.

MATERIALS AND METHODS:

All chemicals and reagents used in this research work are of analytical grade and were procured from an authorized dealer.

Collection of Plants and Processing:

The three plants Milkweed, Cotton seed and Flax Seed were collected in their favourable grow season from the local areas. The entire plants along with seeds were washed thoroughly and dried under dark condition. The shade dried plants were further dried in hot air oven (Hot air oven – ACM-22061-I, Amcas Technologies Pvt. Ltd) in a controlled temperature of 35 to 40 °C. The dried parts of plants was crushed and stored for further studies.

Experimental studies:

A comparative study was made in between Milkweed, Cotton seed and Flax Seed. The proteins, Fibres, Fats and Ash values of mentioned three plants, were determined as per the standard prescribed methods mentioned in Ayurvedic Pharmacopoeia. The total nitrogen present in a 2 g sample was determined by the Kjeldahl method multiplied by factor 6.25 and represents the total nitrogen expressed as crude protein.

Fig 3. The milkweed plant seeds.

The fat content was determined by determining the saponification values [5].**RESULTS AND DISCUSSIONS:**

The results of this study may serve to focus attention toward numerous latent possibilities inherent in many of our uncultivated plants. This phase of plant investigation offers a wide field of endeavor, and should aid in that

difficult task of removing possible prejudices against the introduction of new plant genera as potential crops.

It is evident that from a compositional point of view, milkweed shares a like honour with several of our crop plants, as it contain large amount of nitrogen and fat, as evident from data given in Table 1. The quantity of these constituents varies somewhat with the environment of the plant.

Table 1. Analyses of various plant seeds.

Plant	Protein (%)	Fiber (%)	Fat (%)	Ash (%)
Milkweed	37.53	11.50	21.20	4.1
Cotton Seed	19.50	22.00	19.00	4.6
Flax Seed	22.00	7.10	33.00	4.3

CONCLUSION:

The paper cites milkweeds as promising medicinal plant with a wide range of pharmacological activities which could be utilised in several medical applications because of its effectiveness and safety.

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