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***Silybum marianum* L. Despite of its Weedy Nature is an Important Medicinal Plant of NWFP, Pakistan**

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Milk thistle (*Silybum marianum* L.) belongs to Asteraceae family and is native to Mediterranean basin, its edible fleshy stem and sprouts (germinating seeds) have antioxidant, hepatoprotective, anticancer and hypolipidemic folk medicinal use (Vaknin *et al.*, 2008; Sarwar *et al.*, 2011). It is also found in semi-arid areas of Wadi Gaza, Gaza Strip and Palestine (Abou Auda *et al.*, 2009; El-darier *et al.*, 2001). It is a medicinally important plant, also a wide spread weed in NWFP, causing greater than 37% loss in wheat yield (Khan *et al.*, 2009). High rain and low temperature favors its growth while the high plant density (e.g., wheat) can temporarily suppress its growth (Marwat and Khan, 2007). Nitrogen fertilization can also affect its growth. It possesses a significant positive effect on plant height, number of capitula per plant and seed yield but a significant negative effect was found on silymarin and silybin contents of seeds (Omidbaigi and Nobakht, 2001). Seeds of *S. marianum* are of great medicinal importance. Its seeds are the rich source of carbohydrates (37.72%) and few fractions of important minerals e.g., Zn, Ca, Fe, Mg etc. (Ahmad *et al.*, 2007). Oil obtained from its seeds contain linolenic, oleic, palmitic and stearic acid and proteins (aspartic acid, glycine, glutamic acid and cysteine are among major amino acids).

Phenolic extracts of *S. marianum* has the great potential to stop the thioacetamide induced toxic effects in rats' liver (Madani *et al.*, 2008). These extracts can reduce the hazardous effects of aminotransferases, alkaline phosphatase and bilirubin induced by thioacetamide in rats' liver. Silymarin is a hepatoprotective flavonolignan extract of *S. marianum* seeds whose quality and quantity in fruits depends upon the growing conditions of plant (Hasanloo *et al.*, 2005; Hussain *et al.*, 2011; Shokrpour *et al.*, 2007; Smith *et al.*, 2005). As the fruits from green house plants showed the least contents of silymarin. Without any side effects it protects the wistar rats' liver from the adverse effects of less food supply, also known as food restriction (Dehghan *et al.*, 2010). Food restriction causes a deleterious decrease in the livers' glucose, triglyceride and protein contents, which was highly inhibited by the application of *S. marianum* extracted silymarin. A frequent exposure to Ultraviolet (UV) radiations causes many skin problems, Vaid and Katiyar (2010) while reviewing previous studies proposed the protective effects of silymarin against UV exposures. According to their views silymarin is obtained from fruits and seeds of *S. marianum* and has the photoprotection, anti-oxidant, anti-inflammatory and immunomodulatory activity. Silibinin is another medicinally important flavonolignan of *S. marianum*, showed the potential to induce the differentiation of hair follicle stem cell into neuron cells (Nobakht *et al.*, 2011). Moreover it also showed the neuroprotective activity during the experiment. Silibinin is a nontoxic compound and stops the proliferation of cancer through the inactivation of tumor causing Hypoxia-Inducible Factor 1 (HIF-1) (Maceira and Mateo, 2009). It also caused the inhibition in the release of hypoxia-induced Vascular Endothelial Growth Factor (VEGF) and activates Akt-signaling which ultimately inhibits the tumor.

In a recent study conducted by Hussain *et al.* (2010) the distribution of *S. marianum* and its folk therapeutic significance in the NWFP areas of Pakistan was evaluated. The studied area includes Abbottabad, Haripur, Hattar, Hawaiian, Kanagrra Colony, Kot Bandi, Kot Najeebullah and Mansehra. In these areas it proliferates wildly from October to May covering 20-52% area with maximum distribution in Haripur where it represents 52% of total plant species. Large distribution of milk thistle in Haripur might be due to its use as a food for humans and camels. Many other medicinal plants e.g., *Achyranthes aspera*, *Berberis lyceum*, *Chenopodium ambrosioides*, *Dodonaea viscosa*, *Pinus* sp., *Solanum nigrum*, etc. were also found but *S. marianum* covers relatively larger land than other species in most of the studied areas. A total of 180 peoples were interviewed to access its medicinal significance in 8 areas of NWFP. Out of which ninety were hakims and others were local peoples that were questioned, it was found that the knowledge of its medicinal values was scarce in local peoples. The local community of all 8 areas has some different uses of milk thistle. They use it as vegetable, fodder and firing material but some medicinal uses such as for hepatitis, digestive, blood and skin problems were also known to them. The hakims of NWFP prescribe it for hepatitis A-C, cancer, liver, skin and stomach problems. The medicinal knowledge of *S. marianum* was not equally well known among hakims of all localities. Some people preferred its use as a whole plant while majority use its seeds only. Thus from the study of NWFP areas it can

be concluded that despite of having many medicinal plants *S. marianum* keeps its own significance. In these areas *S. marianum* is well known of its medicinal uses and its distribution is independent to the presence of other species. The large distribution of this species to many areas can be ascribed to its variety of local uses by the peoples of that area.

S. marianum also known as milk thistle is a potential medicinal plant in NWFP, Pakistan. It is widely distributed in many areas of NWFP where it is under extensive folk therapeutic use. Its phytochemical may have protective nature against cancer, liver, stomach and neural health problems. Due to its anti-oxidant property it has the potential in the treatment of various diseases. Its use in non-cultivated areas of NWFP can be promoted so that its weedy nature may not cause any harm to crop plants.

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