TRENDS IN AGRICULTURE SCIENCE
Vol.3 Issue 10 October 2024, Page: 2256-2260
Popular Article

Nutraceutical and Phytochemical Components a Traditional Indian Vegetable: *Solanum torvum* Sw. (Solanaceae)

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DOI:10.5281/TrendsinAgri.14019233

Abstract

The *Solanum torvum* largest family Solanaceae, contains many species that are found both in the wild and under cultivation around the world. This family includes a large number of domesticated species that make substantial contributions to the food business. A number of species in the solanaceae family, which is the largest, are found all over the world in both wild and cultivated forms. Many domesticated species from this family contribute a significant amount of the food industry. *Solanum torvum,* which is also utilised as rootstock for produced Solanaceae, has the ability to escape from its natural habitats, altering native vegetation and modifying interactions with other species. The plant has been utilised as a hepatoprotective agent in Indian traditional medicine and its fruits are utilised as a nervous tonic in mexican traditional medicine. But when it comes to treating gastrohelcosis, leaves and berries are especially in essential.

Keywords: *Solanum torvum:* hepatoprotective agent, gastrohelcosis, Indian traditional medicine

Introduction

Solanum torvum, is the family that includes the Solanaceae which can be discovered in southern India. A prominent genus of angiosperms, *Solanum L*. (Solanaceae) contains about 1200 species that are found all over the world (Knapp, 2019). A native of India, *Solanum nigrum* L. (Solanaceae) is widely utilised in eastern medicine and is thought to possess a variety of biological qualities. It cultivated in the tropics for its immature fruits with a bitter taste, this prickly shrub can grow up to 5 meters tall (Graham *et al.,* 2000). It contains a number of chemical substances with potential for therapeutic activity, such as solanine, chlorogenin, solasodine, solamargine and sapogenin steroid (Hartwell, 1935). According to reports, *S. torvum* extracts can help treat leprosy, colds, coughs, acne and skin conditions (Sonata, 1986). Wild varieties of this genus include *S. tuberosum* L. (potato), *S. lycopersicum* L. (tomato), *S. melongena* L. subsp. *melongena* (eggplant), *S. aethiopicum* L. (bitter tomato), *S. muricatum* Aiton (pepino) and others that are important agricultural food species that are widely used by humans (Hammer and Laghetti, 2006). According

Published: 30 October 2024
ISSN: 2583-7850

to Stinca *et al.* (2017), alien plants are only utilised for decorative purposes in southern Italy when they manage to escape domestication. According to Valde's (2012), there are sixty-two species of Solanum in all in Europe, but only twenty-three species total-three of which are native to Italy and the other twenty-three are aliens. Salerno and Stinca (2017), recognised other invasive species in this family that are present in Italy. The berries of this plant are widely used as a vegetable and in the treatment of several illnesses in India (Adjanohoun *et al.,* 1996).

Phytochemical components on *Solanum torvum*

One common wild plant that is known to enhance nutrition is *Solanaum torvum*. It is a 3 m tall shrub with few branches, a straight prickle-covered stem and broadly oval, shallowly cordate, acuminate leaves that are thickly stellate tomentose below and less so above. The petiole and lower surface of the midrib are also sparsely prickly. Mineral nutrition is an important part of life and is essential for normal development. These dietary minerals come from a variety of sources. Because wild edible plants are used as food in many African nations, these make an important contribution to the people's nutritional needs. *Solanum torvum*, also known as "Kwahunsusua" in Ghanaian dialect is mostly used for food. It is particularly incorporated to various stews and palm nut soup in the southern region of Ghana. The *Solanum torvum* contains phytoconstituents, such as triterpenoids, glycosides, saponins, tannins and phenols. Saponins have a protective effect against blood lipid accumulation and cancer. Additionally, they support strengthening the immune system and preventing future illnesses.

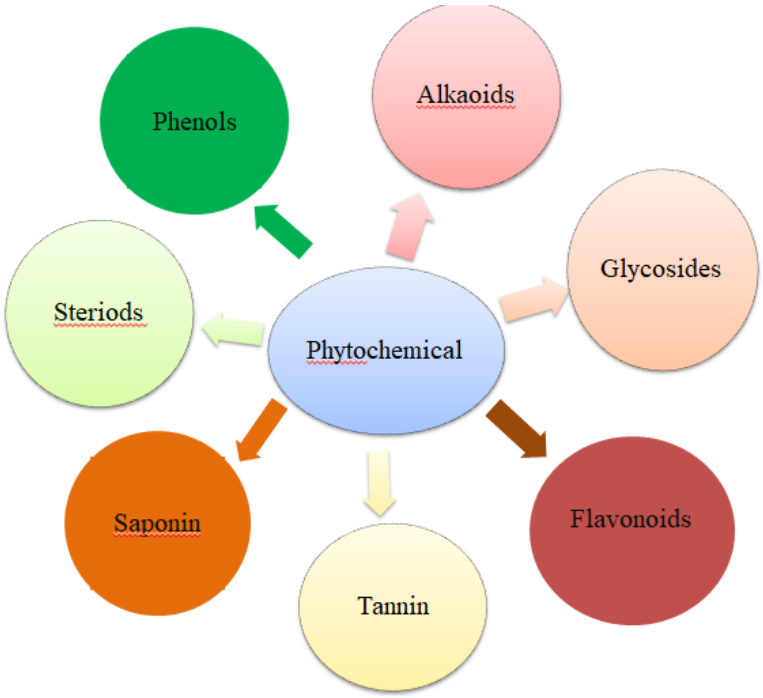

Fig. 1. Phytochemical components in *Solanum torvum*

Official Website: trendsinagriculturescience.com
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Published: 30 October 2024
ISSN: 2583-7850

Flower

Stem

Fruit

Plant

Fig. 2. Plant Characters in *Solanum torvum*

Nutraceutical components on *Solanum torvum*

Solanum torvum had the highest concentration of proteins, carbohydrates, vitamins C, D and E and practically all minerals in an investigation of the nutritional properties of various Solanum species. But whenever it investigated PUFA (poly unsaturated fatty acid) and MUFA (mono unsaturated fatty acid), *S. melongena var. insanum* had the highest concentration. *S. melongena* had the highest levels of dietary fibre, vitamins A, K, B1 and B2 and other nutrients (Akoto *et al.,* 2015). In comparison to pomegranate, papaya, strawberry, guava, banana, mango and sapota, the berries of *Solanum torvum* have the highest quantity of vitamin C/ascorbic acid (37.4 mg/100 g), according to a nutrient study of a few wild edible fruits from India's deciduous forest zone (Nadeeshani *et al.,* 2021). Berries can be included in an anti-hypertensive diet and by obese individuals due to their high water content (82.41% w/w) and low fat content (1.09% w/w). Additional research revealed that the

Published: 30 October 2024
ISSN: 2583-7850

berries have an 80.5% water content (Mahapatra *et al.,* 2012). The AOAC's standard procedures have thus been used to assess the fruit of *Solanum torvum's* contents of carbohydrates, lipids, proteins, mineral salts and vitamin C. The contents of biochemical constituents were 4.65 ± 0.46% for ash, 2.44 ± 0.36% for vitamin C, 71.42 ± 0.52% for total carbohydrates, 16.49 ± 0.47% for proteins, 7.71 ± 0.19% for lipids and 421 ± 2.01% for metabolisable energy (Mamatchi Melila *et al.,* 2021). Hence, the mineral content of *Solanum torvum* fruits was not insignificant and was even on par with several major supply-chain vegetables and legumes, like baobab and moringa leaves (Ocho-Anin *et al.,* 2012).

Conclusion

An indigenous substance recognised for its pharmacological qualities is *Solanum torvum*. Berries containing *Solanum torvum* have the potential to enhance our diet by providing valuable antioxidants and improving nutrition. Some researchers have provided indication of the berries' biological activity through phytochemical and biochemical research. The results of this study indicate that the fruits of this species include a substantial portion of the Recommended Daily Allowance and have high nutritional value. The majority of the nutrients needed for healthy growth are found in *Solanum torvum* and as the fruits are typically added to meals, they also contribute to the overall nutritional value of the food that has been consumed.

REFERENCES

1. Adjanohoun JE, Aboubakar N, Dramane K, Ebot ME, Ekpere JA, Enoworock EG. (1996). “Traditional medicine and pharmacopoeia-contribution to Ethnobotanical and floristic studies in Cameroon”. In: CNPMS. Benin: Porto-Novo; pp. 50–52.
2. Akoto, O., Borquaye, L. S., Howard, A. S. and Konwuruk, N. (2015). “Nutritional and mineral composition of the fruits of *Solanum torvum* from Ghana”. Int. J. Chem. Biomol. Sci., 1(4), 222–226.
3. Graham JG, Quinn ML, Fabricant DS, Fransworth NR, Kamboj. (2000). “Plants used against cancer-an extension of the work of Jonathan Hartwell”. Journal of Ethanopharmacology; 73: 347 -77.
4. Hammer K, Laghetti G. (2006). “Small agricultural islands and plant genetic resources”. C.N.R., Bari.
5. Hartwell JL. (1967). “Plants used against cancer: A survey”. L. Loydia (Cinci); 30:379 – 436.
6. KnappS, VorontsovaMS, Sarkinen T. (2019). “Dichotomouskeys to the species of *Solanum* L. (Solanaceae) in continental Africa, Madagascar (incl. the Indian Ocean islands), Macaronesia and the Cape Verde Islands”. PhytoKeys 127:39-76.

Published: 30 October 2024
ISSN: 2583-7850

7. Mahapatra, A. K., Mishra, S., Basak, U. C. and Panda, P. C. (2012). "Nutrient analysis of some selected wild edible fruits of deciduous forests of India: an explorative study towards non-conventional bio-nutrition". Adv. J. Food Sci. Technol., 4(1), 15–21.
8. Mamatchi Melila1,Bayi Reine Dossou, Kodjo Djidjolé Etse, Firmin Sika, Koffi Batchazi, Essodjolon Kanabiya, Laurance Adjo Amegah, Koffi Gilbert Lakpo, Koami Ameyran, Kou'Santa Amouzou1. (2021). "Biochemical Study and Evaluation of the Nutritional Value of *Solanum torvum* (Swartz) Fruits Used as Fruiting Vegetables in Togo". Journal of Food and Nutrition Research, Vol. 9, No. 11, 579-584
9. Nadeeshani, H., Samarasinghe, G., Wimalasiri, S., Silva, R., Hunter, D. and Madhujith, T. (2021). "Comparative analysis of the nutritional profiles of selected *Solanum* species grown in Sri Lanka". J. Food Compos. Anal., 99, 103847
10. Ocho-Anin A. A, Soro L., Kouame C., Agbo E., Kouadio K. (2012). "Valeur nutritionnelle des légumes feuilles consommés en Côte d'Ivoire". Int J Biol Chem Sci., 6(1): 128-135.
11. Sonata S. (1986). "The efficacy of Ayurveda drugs on Cancer (Arbuda).Workshop on cancer souvenir. Chennai Central Research Institute for Siddha.
12. Stinca A, Chianese G, D'Auria G, Del Guacchio E, Fascetti S, Perrino EV, Rosati L,Salerno G,Santangelo A.(2017). "New alien vascular species for the flora of southern Italy". Webbia72(2):295–301.

Published: 30 October 2024
ISSN: 2583-7850