

Screening of *Abutilon muticum* for Bioactive Constituents, Mineral Contents, Antioxidants and Hepatoprotective activity

Sammia Shahid

Department of Basic Sciences, School of Science and Technology, University of Management and Technology, Lahore-54770, Pakistan

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Background:

The genus *Abutilon* belongs to the family Malvaceae and has about 150 species distributed throughout the Mediterranean to central Asia, particularly in India and Pakistan. Several species of this genus have been used in folk medicines as analgesic and for the treatment of digestive disorders, toothache, arthritis and so forth. *Abutilon muticum*, a species of genus *Abutilon* occurs in plains throughout Pakistan especially more common in Sindh and abundant in the deserts of Cholistan, Bahawalpur. *Abutilon muticum* is traditionally used for analgesic, anthelmintic, hepatoprotective and hypoglycemic properties.

Objective:

Due to the increasing awareness regarding health beneficial effects of herbs many research groups have examined plants for exploiting novel potential sources of natural bioactive constituents. Of the hundreds of previous studies on the capacity of higher plants, few researchers have examined the herbs/ shrubs that can be found in Asia especially India and Pakistan. In doing so, we have identified plant species for chemical constituents and mineral contents and correlate these with the antioxidant and hepatoprotective capacity that warrants further investigation, especially for a series of plants of family Malvaceae.

Methods:

Extracts in organic solvents were prepared and evaluated for chemical constituents by column chromatography and various sophisticated spectroscopic techniques. Mineral contents were determined by atomic absorption spectroscopy. Their total antioxidant capacity was determined using ABTS radical cation decolourization,

ferric reducing antioxidant power (FRAP), 1,1-diphenyl-2-picrylhydrazil (DPPH) free radical scavenging, total phenolic content and total antioxidant activity assays. Trolox equivalent antioxidant capacity (TEAC) of seeds of both the plants was found employing ABTS and FRAP assays. In addition hepatoprotective activity of aqueous methanolic extract of aerial parts of *A. muticum* was evaluated against paracetamol and CCl₄ induced hepatic damage in rabbits. The extracts at dose of 150 and 300mg/kg were administered orally. The substantially elevated enzyme levels were restored towards normalization significantly by the extracts. Silymarin was used as reference standard. The biochemical observations were supplemented with histopathological examination of rabbit liver sections.

Results:

The compounds isolated were: 3,4',5,6,7-pentahydroxy flavone (1), 3, 3', 4', 5, 7-pentahydroxy flavone-8-O- β -D-glucopyranoside (2), 3, 3', 4', 5, 7-pentahydroxy flavone (3), stigmasterol (4), benzoic acid (5), 1-tricosanol (6), cholesterol (7) and triacontyl palmitate (8). Aerial parts of *A. muticum* were subjected to proximate analysis. The results obtained were; moisture (8.23%), ash (17.29 %), crude fiber (23.46 %), crude protein (16.13 %) and crude carbohydrate (32.04 %). The ash was also analyzed for its mineral contents which were found to be (mg/100g); aluminium (5.16), cadmium (0.02), calcium (395.23), iron (3.21), lead (0.02), magnesium (193.42), phosphorus (327.13), potassium (443.01) and zinc (21.05). The results of hepatoprotective study strongly indicated that *A. muticum* had potent hepatoprotective action against paracetamol and CCl₄ induced hepatic damage in rabbits.

Conclusion:

As *Abutilon* species grow wildly as weeds in tropical and sub tropical areas under harsh conditions, they may be produced on a large scale as value added products. Pakistan being agriculture country undoubtedly has the capacity for large scale production of *Abutilon* species. The results obtained with the *Abutilon* specie may be considered very promising, indicating the potential for obtaining new bioactive agents.

Corresponding author: Email: drsammishahid@gmail.com Phone: 0092-3008864139, Postal Address: Department of Basic Sciences, School of Science and Technology, University of Management and Technology, Lahore-54770, Pakistan

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