



Exploring the Phytochemistry and Therapeutic Applications of *Oxystelma esculentum*

Abdul Wadood Chishti¹, Khalil Ahmad², Muhammad Akram^{1*}

¹Department of Eastern Medicine Government College University Faisalabad, Pakistan

²Department of Poultry Diseases, Faculty of Veterinary Medicine, Cairo University, Giza, Egypt

*Corresponding Author

Dr. Muhammad Akram

Department of Eastern
Medicine Government College
University Faisalabad, Pakistan

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Abstract: A plant with important ethnomedical applications, *Oxystelma esculentum*, has garnered interest due to its numerous therapeutic benefits. This study examines its phytochemical composition, which includes alkaloids, flavonoids, glycosides, and saponins. These compounds support its anti-inflammatory, anticancer, antioxidant, and antibacterial properties. Potential health benefits, including immune regulation, wound healing, and digestive health, are associated with the plant's bioactive constituents. This study discusses the pharmacological uses of *Oxystelma esculentum* along with scientific data supporting its historical use in treating a variety of diseases. New therapeutic opportunities for contemporary medicine may arise from further investigation of its bioactive constituents and modes of action.

Keywords: *Oxystelma esculentum*, Phytochemistry, Bioactive compounds, Flavonoids, Pharmacological properties.

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INTRODUCTION

The plant thin, glabrous, and attracts a large number of flower visitors. From northern Africa to southern Asia, the species has a wide range of distribution. The factory was established in Iraq and Egypt. To southern China, Pakistan, Sri Lanka, India, Bangladesh, Myanmar, and Nepal [1]. Ulcers can be treated with the milky sap. It is used to treat itch when combined with turpentine [2]. In spite of its abundantly presence, this plant has not been sufficiently explored. In table 1.1 and 1.2 the taxonomical classification and vernacular names are discussed. The words Oxys means sharp and Stelma means crown, i.e. sharp crown. It is a climbing weed

which has long cylindrical, glabrous, weak and much branched stem. The leaf is simple [3-6], lanceolate, opposite, linear usually 9cm x 0.6cm, in length with pointed apex, having long petiole as showed in figure below. The inflorescence is solitary and sub umbellate. The flowers are pink in color with purple vein which are widely open 2.4cm-4.55 cm in diameter and hanging down word as shown in figure below. The Calyx and corolla have five sepeoules, cone shape, free from hair, oblong and glandular inside. The Follicles are 5.0-8.0cm long, often grown alone, oval and lanceolate in shape having smooth surface and containing many blackish, oval shape seeds [7, 8].

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Figure 1: Flower of *Oxystelma esculntum*



Figure 2: Leaves and flowers of *Oxystelma esculntum*

Medicinal Values

This plant has been reported as, antitussive laxative, spermatogenic, diuretic antileprotic and anthelmintic. It stimulates female fertility. Whole plant is used as hepatoprotective and useful in lung inflammation and skin diseases (Leukoderma). The decoction of *Oxystelma esculntum* is useful in ulcer, sore-throat and itches. Fruit general tonic, antitussive and, anthelmintic, muscle spasm, antitussive and used in many skin ailments such as leukoderma [9].

General Chemical Analysis

Isolation of Pregnane Glycosides

The oxystine, esculentine and oxysine are compounds which are basically pregnane glycosides were isolated by a group of researchers. The oxystine derived from diethyl ether extract of root with the help of repeatedly column chromatography using methanol and chloroform (96:4) as eluent yielded oxystine [10].

Pharmacological Evaluation of *Oxystelma esculntum*

Anticancer Activity

A group of swiss albino rats was selected and Ehrlich's ascities carcinoma induced in them. They were treated with methanol extract of leaves of *Oxystelma esculntum*. The result indicated that there

is marked decline in hematocrit, tumor volume and live cell count. The methanol extract not only decrease the level of white blood cells which were increased after induction of disease but it also increased red blood cells and hemoglobin count. This extract also boost up the level of gonadotropic hormone and decreased the level of LPO [11].

Antioxidant Activity

The experiments was done on in vitro model. It was also discovered to block the nitric oxide radicals produced by sodium nitropruside. In a dose-dependent way, the methanolic extract of *Oxystelma esculntum* scavenges hydrogen peroxide [12].

Antimicrobial Activity

The group of researcher explored the antimicrobial activity of leaves of *Oxystelma esculntum* in various extraction solvents [13-15].

Hepatoprotective Effect

This backs up the plant's reputation as a highly effective laxative. Cardenolides, avonoids, phenolics, sterols, and triterpenoids were found in phytochemical screening of petroleum ether extract, which may be responsible for the laxative action [16].

CONCLUSION

Oxystelma esculentum contain cardenolides and pregnane glycosides. These constituents are present only in few plants. Both of which are easily and inexpensively produced. Cancer, hepatitis, stress-related illnesses, urinary problems, and bacterial infections have all become significant worldwide challenges as a result of changing environment and lifestyle. This plant has been found to have effective anti-cancer properties.

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