ISSN :2455-0108 Impact Factor: 2015-3.462
IJO–Science
INTERNATIONAL JOURNAL ONLINE OF SCIENCE
Volume II Issue II April 2016

PHARMACEUTICAL EVALUATION AND ANTIMYCOTIC POTENTIAL OF VARIOUS SECONDARY METABOLITES OF *GYMNEA SYLVESTRE*

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Abstract :

The present paper reports the phytochemical and micropropagation investigations of an undermined plant, *Gymnema sylvestre*. *Gymnema sylvestre* which has a place with the family Asclepiadaceae is a lasting moderate developing restorative woody climber generally called as "*Gudmar*". There is a developing interest for leaves of G. sylvestre in the pharmaceutical exchange because of its utilization as a solution for diabetes and furthermore as a tonic of the nerves and as a diuretic. Proliferation of this plant is regularly hard and costly. In the present review the subjective examination affirmed the nearness of different phytochemicals like alkaloids, flavonoids, phenols, tannins, terpenoids and glycosides. Quantitative estimation of flavonoids and phenols was likewise completed and antimycotic potential further evaluated using standardized assays. In vitro proliferation is

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an option technique for spread of the undermined and imperiled plant which can help its preservation. The nodal explants were refined on MS medium containing diverse focus and mixes of development controllers like 6-benzylaminopurine (BAP) and indoleacetic corrosive (IAA). Different shoot buds were regener-ated effectively from the nodal explants which were proficiently established on 1⁄2 quality MS medium supplemented with IBA. The recovered plantlets were effectively exchanged to the glasshouse, acclimatized and exchanged to the field.

Introduction :

Gymnema sylvestre R.Br. which has a place with the family Asclepiadaceae, is a helpless species. It is a lasting moderate developing woody climber of tropical and subtropical locales (Anonymous, 1997). It is an intense antidiabetic plant and utilized as a part of society, homeopathic and ayurvedic frameworks of pharmaceutical (Mitra et al., 1995). It is additionally utilized as a part of treating of asthma, eye grievances, aggravations, family arranging and snake nibble (Anonymous, 1956; Selvanayagam et al., 1995). What's more, it has antimicrobial, antihypercholesterolemic (Bishayee and Chatterjee, 1994), hepatoprotective (Rana and Avadhoot, 1992) and sweet stifling (Kurihara, 1992) exercises. It additionally goes about as nourishing obstacles to caterpillar, Prodenia eridania (Granich et al., 1974), forestall dental caries brought on by *Streptococcus mutans* (Hiji Yasutake, 1990) and in skin beautifying agents (Maeda et al., 1996). There is a developing interest for leaves of G. sylvestre in the pharmaceutical exchange because of its utilization as a solution for diabetes and furthermore as a tonic of the nerves and as a purgative (Shanmugasundaram et al., 1983), as a hostile to sweetner (Kurihara, 1992) and as an antihypercholesterolemic (Bishayee and Chatterjee,1994). It likewise has stomatic, diuretic and hack suppressant property (Kapoor, 1990). Expanding attention to the reactions of Western medications ISSN: 2321 - 8371 have made overall population turn towards the natural solution, in this manner the requests for therapeutic plants

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IJO–Science
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have definitely expanded. Due to over abuse, this plant species has turned out to be undermined and is recorded in International Union for Conservation of Nature (IUCN) red information book (Shailasree et al., 2012). *Gymnema sylvestre* is a moderate developing, lasting woody climber (Shrivastava and Singh, 2011). Seeds lose suitability in a brief time of capacity (Reddy et al., l998). Customary engendering strategies are hampered because of its poor seed suitability, low rate of germination and poor establishing capacity of vegetative cuttings (Komavali and Rao, 2000). The proliferation of plant through seed brings about less survivability under normal conditions (Anonymous, 1950). Along these lines, to satisfy the expanding interest of this powerful restorative plant and populace, in vitro culture and micropropagation could be an option technique to help in its preservation. Along these lines, the engendering of this plant species by option strategies is required. The present investigation of *Gymnema sylvestre* has been taken up to do subjective phytochemical examination for alkaloids, flavonoids, tannins, saponins, phenols, steroids, terpenoids and glycosides exhibit in leaves and evaluate the flavonoids and phenols and in vitro spread through direct organogenesis utilizing nodal fragments as explants.

Materials and Methods

Gymnema sylvestre plants were gathered from Herbal garden, N. G. Ranga Agricultural University at Hyderabad and planted in the Botanical Garden at Department of Botany, Osmania University, Hyderabad. *Gymnema sylvestre*. is a moderate developing, enduring woody climber of tropical and subtropical areas with a twining woody stem and inverse petiolate leaves, whole, smooth sparkly, changing fit as a fiddle and size as per their age. Blossoms are little, in axillary sessile racemes. The root is long, unbending and barrel shaped. These plants were subjected to phytochemical examination (subjective and quantitative) for the nearness of critical auxiliary metabolite mixes. Advance, a great convention for micropropagation was

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created to help in its augmentation and preservation.

Subjective investigation: Preparation of plant concentrate:

The plant concentrate was set up by pounding 0.5 gm of the plant part (leaf, shoot or root and so forth…) in 100 ml refined water. This concentrate was sifted through a fine work into a test tube. This rough concentrate was utilized for the subjective tests given underneath (Karthikeyan et al., 2009, Lozoya et al, 1989) and the tests were completed in triplicate.

Test for distinguishing proof of Alkaloids:

Around 0.5 gm of methanol concentrate was taken in a test tube and was weakened and homogenized with 10 ml refined water, broke down in 20 ml weaken HCl arrangement and cleared up by filtration. The filtrate was tried with Drangendroff's and Mayer's reagent. The treated arrangement was watched for precipitation of white or smooth shading.

Test for distinguishing proof of Flavonoids: About 0.5 gm of concentrate was brought into 10 ml of ethyl acetic acid derivation in a test tube and warmed in bubbling water for 1 min. The blend was then separated. Around 4 ml of the filtrate was shaken with 1 ml 1% aluminum chloride arrangement and hatched for 10 min. Arrangement of yellow shading within the sight of 1 ml weaken smelling salts arrangement showed the nearness of flavonoids.

Test for recognizable proof of Phenols:

Around 0.5 gm of concentrate was taken in a test tube, blended with 100ml refined water and warmed delicately. Ferric chloride arrangement of 2 ml volume was included and watched for the development of green or blue shading.

Test for distinguishing proof of Saponins: About 0.5 gm of methanol concentrate was taken in a test tube and 5 ml refined water

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was included. Tenacious foam was seen upon overwhelming shaking of arrangement. 3 drops of olive oil was added to the foaming and shaken overwhelmingly after which it was watched for the arrangement of an emulsion.

Test for distinguishing proof of Steroids:

Around 0.5 gm of methanol concentrate was taken in a test tube and 2 ml of acidic anhydride was added to it and 2 ml of sulphuric corrosive was included at the edges of the test tube and watched for the shading change to violet or blue green.

Test for distinguishing proof of Tannins:

Five grams of the ground powder was extricated with 10 ml ammonical chloroform and 5 ml chloroform. The blend was sifted and the filtrate was shaken with 10 drops of 0.5 M sulphuric corrosive. Creamish white accelerate was watched for the nearness of tannins.

Test for ID of Terpenoids:

5 ml of the methanol concentrate was blended with 2 ml of chloroform and 2ml concentrated sulphuric corrosive. The layer interface was watched for ruddy cocoa shading which shows the nearness of Terpenoids.

Quantitative examination:

Quantitative examination was completed to gauge add up to phenols and aggregate flavonoids

Assurance of aggregate phenols.

Folin Ciocalteu reagent technique (Mc Donald et al., 2001) with a few adjustments was received for aggregate phenolic content assurance. The root separate (1.0 ml) was blended with Ciocalteu reagent and permitted to remain for 15 min and 5 ml of immersed Na2CO3 was included. The blend was permitted to remain for 30 min at room temperature and the aggregate phenols were resolved spectrophotometrically at 760 nm. Gallic corrosive was utilized as a standard. Add up to phenol qualities are communicated as far as gallic corrosive equal (mg/g of separated compound).

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Assurance of aggregate flavonoids:

Aluminum chloride - calorimetric technique (Chang et al., 2002) with a few alterations was utilized to decide flavonoid content. 1.0 ml root concentrate was blended with 1.0 ml methanol, 0.5 ml aluminum chloride (1.2 %) and 0.5 ml potassium acetic acid derivation (0.1176%). The blend was permitted to remain for 30 min at room temperature. Later the absorbance was measured at 415 nm. Quercetin was utilized as standard. Flavonoid substance is communicated as far as quercetin comparable.

To test the antimycotic potential, various assays were standardized. (Data not included)

Results and discourse

The present review contributes profitable data of bioactive mixes in *G. sylvestre*. Subjective investigation of plant concentrate was completed for Alkaloids, Flavonoids, Saponins, Phenols, Tannins, Steroids, Terpenoids and Glycosides. The greater part of the phytochemicals like Alkaloids Flavonoids, Phenols, Tannins, Terpenoids and Glycosides were available in *Gymnema sylvestre* aside from Saponins and Steroids which is like the reports of Vaghasiya et al. (2011) and Han et al. (2007). The plant concentrates were quantitatively investigated for Flavonoids and Phenol. Though, our review reports the nonattendance of Saponins, Kalidas et al. (2010) and Ajaiyeoba (2000) showed that Saponins were available in *G. sylvestre* in the watery concentrate. A few restorative properties have been credited to Saponins (Gopinath, 2012) and Kalidas et al. (2010) yet shockingly, Saponins were not found in the present review. Flavonoids and Phenol are however detailed in the present review which concurs with the discoveries of Vaghasiya et al. (2011) who has ascribed antidiabetic, against maturing antiinflammation and bactericidal impacts .

Conclusion

It is presumed that *Gymnema sylvestre* is a plant with an assortment of ethnic therapeutic employments. The subjective

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and quantitative investigation of G. Sylvestre demonstrates the nearness of bioactive mixes, for example, Alkaloids Flavonoids, Phenols, Tannins, Terpenoids and Glycosides. This is profitable data for planning of medications in pharmaceutical industry and stress the requirement for additional serious research since they assume an extraordinary part in social insurance. The present review depicts the fruitful advancement of quick micropropagation conventional of *Gymnema Sylvestre*. This convention gives a fruitful strategy for augmentation and the protection of the profitable therapeutic plant which is utilized as a part of treating different scatters. The convention grew directly can be taken up in vast scale to deliver the planting material for improvement of therapeutic plant development programs furthermore, it can likewise help the pharmaceutical business. Future research area includes its antimycotic potential.

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