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## **Review Article**

- **Bioassay: -An uncomplicated methodologies for ensure safety of Traditional Formulations**

**Karunakar Shukla .....01**

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### **ABSTRACT**

In the recent years' there has been a great demand for the plant derived traditional formulations in the developed countries. These formulations are increasingly being required as medicinal products, nutraceuticals, and cosmetics. India has one of the 12th mega biodiversities in the world and having great assets of traditional systems of medicines (Ayurveda, Siddha and Unani). One of the major region for the India's inadequate execution is that our products are not backed by rigorous scientific studies to established their safety, efficacy, and standards. For the purpose of develops safety, efficacy, and standards, the importance of standardization of Traditional formulation and crude drugs is now well understood by the consumers as well as the industry. Standardization helps in effective quality control during commercial production of Traditional formulations. During the last few years' emphasis has been laid on chemical methods of standardization, based on physical chemical assay, chromatographic analysis and various spectroscopic techniques. Most of these are qualitative methods though many Traditional formulation and crude plant material have been standardized quantitavely using HPLC, HPTLC, GC and these methods are used as an effective quality control parameters. In such cases chemical marker have been isolated and characterized, in several plant materials spectroscopic method of standardization have also been found to be usefull. However, marker compound based standardization has not been effective since these markers are not biologically active constituents in the most of the cases. All the methods are accounts for a single chemical entity or a group of chemical compounds, but in many plants the activity may be attributed to different type of compounds that act synergistically to show the biological activity. There fore the standardization by chemical methods, although used widely, may not prove to be a complete way of standardization for Traditional formulation and further needs biological standardization

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- **Phytochemistry and Pharmacology of Indian Medicinal Plants *Zizyphus Mauritiana* Lamk**

**Nikhath F, D Satyanarayana and Subhramanyam EVS .....05**

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### **ABSTRACT**

The object of this review is to highlight the importance of multipurpose indigenous plant *Zizyphus mauritiana* Lamk Belonging to the family Rhamnaceae . It has been used for centuries as folk remedy in India to treat different disease such as antidiabetic, antioxidant, anti-inflammatory and neurological disorders such as sedative hypnotics, overine complication. It contain several constituent belonging to category alkaloide, Glycoside , flavanoids, triterpinoides, steroids and fruit pulp contain important

nutrients. There are five reports are available on the clinical uses of this plant. Indeed the purpose is to outline the Research student to explore the Phytochemistry and pharmacology of indigenous system of medicine. This was a simple tribute to focus on the economical importance of Indian medicinal plants.

**KEYWORDS:** *Zizyphus mauritiana* Lamk, Rhamunaceae, antidiabetic, antioxidant, anti-inflammatory, alkaloids, Glycoside, flavanoids, triterpinoides, steroids

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## Research Article

- **Evaluation of In Vitro Antioxidant Activity of stem-bark and stem-wood of *Premna serratifolia* Lin., (Verbenaceae)**

**Rekha Rajendran, N Saleem Basha and S Ruby.....11**

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### ABSTRACT

*Premna serratifolia* Lin., is widely used in Ayurvedic system medicine for the treatment of cardiovascular disorders, arthritis, inflammation etc. The stem-bark and stem-wood were extracted with 95% ethanol and double distilled water and these extracts were screened for their in-vitro antioxidant potential. Inhibition of oxygen-derived free radicals, viz., assays for free radical scavenging by DPPH, reducing power ability and nitric oxide scavenging were performed. All the antioxidant activities were compared with standard antioxidant such as ascorbic acid. Both the extracts of this plant showed effective free radical scavenging activity, reducing power and nitric oxide scavenging activity. All these antioxidant properties were concentration dependent. The highest antioxidant activity was observed with ethanol extracts. Preliminary phytochemical screening revealed the presence of flavonoids, steroids, alkaloids, glycosides and phenolic compounds in the extracts and the results obtained from the current study indicate that *Premna serratifolia* Lin., is a potential source of natural antioxidants and the extracts have constituents which were capable of showing anti-oxidant activity and the said in-vitro anti-oxidant activity may also be due to the presence of anti-oxidant principles present in the extracts like flavonoids and phenolic compounds. These findings confirm the great interest of the *Premna serratifolia* whose phytochemistry and phytopharmacology should be investigated further in order to detect possible phytotherapeutic uses in the prevention of ageing related diseases, cardiovascular disorders and Alzheimer disease.

**KEYWORDS:** *Premna serratifolia* Lin., DPPH radical, reducing power determination, scavenging of nitric oxide.

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- **Antidiabetic Activity of *Marsilea quadrifolia* linn in Alloxan-Diabetic Rats**

**Dongare SS, Maske AP, Patil SM, Umbare RP and Mate GS.....15**

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### ABSTRACT

The different extracts of the *Marsilea quadrifolia* linn (Family- *Marsileaceae*) were tested for anti-diabetic activity, by normal rats and alloxan induced diabetic rats. Aqueous and methanol extracts had shown significant protection and lowered the blood glucose level. In alloxan induced diabetic rats the maximum reduction in blood glucose was observed after 72h at a dose level of 200mg/kg body weight. In short term treatment of alloxan induced diabetic rats was determined by measuring blood glucose levels on 0,24,48 and 72h. Both the extracts showed a significant anti- diabetic activity comparable with that of

glibenclamide. These results indicate that the *Marsilea quadrifolia linn plant* possess significant anti-diabetic activity.

**KEYWORDS:** Antidiabetic activity; *Marsilea quadrifolia*; glucose; glibenclamide

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- **Anti-Inflammatory Activity of *Orthosiphon stamineus* Benth Bark Extract**

**Mate GS, Umbare RP, Patil SM, Dongare SS and Naikwadi NS.....18**

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**ABSTRACT**

Hydro-alcoholic extract of bark of *Orthosiphon stamineus* Benth (HAEOSB) was studied for its *in-vivo* anti-inflammatory potential using Carageenan induced rat paw edema and cotton pellet induced granuloma methods. The result of study indicated that Hydro-alcoholic extract possess significant anti-inflammatory activity at doses 500 and 750 mg/kg.

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- **Solid-State Fermentation for the Production of L-Asparaginase by *Aspergillus* Sp**

**V Sreenivasulu, KN Jayaveera and P Mallikarjuna Rao.....21**

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**ABSTRACT**

Production of L-asparaginase employing *Aspergillus sp.* VEM-9 under solid-state fermentation was optimized. Different substrates like rice bran, green gram bran, wheat rawa, wheat bran, Bombay rawa, black gram bran, barley, saw dust, jowar flour, rice flour, castor oil cake, ground nut oil cake, coconut oil cake, sesame oil cake were studied to optimize the best substrate. Groundnut oil cake showed the highest enzyme yield. Different physical fermentation factors were optimized. The maximum productivity of L-asparaginase (60 U/gds) was achieved by employing groundnut oil cake and optimized process parameters including incubation period of 5 days, initial moisture content of solid substrate 90%, 1: 10 (v/w) ratio of salt solution to weight of groundnut oil cake, inoculum level 20%(v/w), incubation temperature at 30 °C and initial pH 6.5.

**KEYWORDS:** L-asparaginase, *Aspergillus sp.* VEM-9, groundnut oil cake, optimization, Solid-state fermentation.

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- **Evaluation of Antidiarrhoeal Activity of Hydroalcoholic Extract of *Ageratum Conyzoides* Linn**

**Mangesh V Tote, Ashutoshpal Jain, Nitin B Mahire, Vaishali R Undale and Ashok V Bhosale.....26**

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**ABSTRACT**

The leaves of *Ageratum conyzoides* are used in traditional medicine for the treatment of diarrhoea. Thus the hydroalcoholic extract of leaves *Ageratum conyzoides* (Asteraceae) was investigated for its antidiarrhoeal property to substantiate folkloric claim. The hydroalcoholic extract of *Ageratum conyzoides*, at graded dose (250 and 500 mg/kg body weight) was investigated for antidiarrhoeal activity in castor oil and magnesium sulphate induced diarrhoea. Results were comparable to that of standard drug loperamide (3 mg/kg body weight). A single oral dose of *Ageratum conyzoides* extract of 500 mg/kg body weight

produced a significant decrease in the severity of diarrhoea. To understand the mechanism of its antidiarrhoeal activity, its effect was further evaluated on intestinal transit and castor oil induced intestinal fluid accumulation (enteropooling). Extract produced profound decrease in intestinal transit (39.66-58.17%) and significantly inhibited castor oil induced enter pooling comparable to that of intraperitoneal injection of standard drug atropine sulphate. The results showed that the hydroalcoholic extract of *Ageratum conyzoides* have a significant antidiarrhoeal activity and supports its traditional uses in herbal medicine.

**KEYWORDS:** *Ageratum conyzoides*, antidiarrhoeal activity, castor oil, atropine sulphate.

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- **Optimization of process parameters for the production of L-asparaginase from an isolated fungus**  
**V Sreenivasulu, KN Jayaveera and P Mallikarjuna Rao.....30**

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**ABSTRACT**

The extracellular L-asparaginase production by fungi isolated from soil samples by using pH and dye based method. Various physical and chemical parameters were optimized under submerged fermentation for L-asparaginase production. Maximum productivity of L-asparaginase (19.5 U/ml) was achieved by employing medium containing 2% (w/v) L-asparagine as substrate concentration, 1%(w/v) glucose as carbon source, 1% (w/v) ammonium sulphate as an additional nitrogen source with the incubation period of 96 h and incubation temperature at 30°C, initial pH 6.5 at an inoculum level 20% (v/v) with 48 h old inoculum was found to be optimum for maximum yield.

**KEY WORDS:** L-asparaginase, optimization and submerged fermentation

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- **Evaluation of Anti-Inflammatory, Antipyretic and Wound Healing Activity of *Curcuma Inodora* (Zingibaraceae)**  
**Deepak Bharati, Sonawane SA, Kanase KG, Undale VR, Abhyankar MM and Bhosale AV.....35**

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**ABSTRACT**

*Curcuma inodora* is small Zingibarous herb and is used by the tribal's as a hair tonic and for cure of wounds. The objective of the present investigation was to study the selected dose of dried methanol extract of rhizomes of *Curcuma inodora* (200mg/kg i.p.) toward possible anti-inflammatory, antipyretic and wound healing potential in experimental animal models. Anti-inflammatory potential of methanol extract was evaluated by carrageenan induced paw oedema and formalin induced paw oedema in rats. Also antipyretic and wound healing activity was also tested on animal models. The studies were conducted on Wistar rats of either sex (160-180 g). The change in oedema volume of the rat hind paw was measured using plethysmometer. The dried methanol extract of *curcuma inodora* (L.) inhibited the formation of paw oedema to significant levels in rats treated either with carrageenan or formalin. At a dose of 200 mg/kg orally, the dried methanol extract produced 74% inhibition in case of the carrageenan-induced oedema (P<0.01), and there was 79.61% inhibition in formalin-induced oedema (P<0.01).

Dried methanol extract of *Curcuma inodora* was also evaluated for antipyretic activity on animals as per Vogel's method. *Curcuma inodora* elicited a dose dependant inhibition of rectal temperature compared with control group. Dried methanol extract of *Curcuma inodora* produced 38.31 % inhibition at 200 mg/kg dose with a maximal inhibition 44.06 % at same dose which was compared with standard inhibition at 100

mg/kg p.o.

In excision wound model, 10% ointment of ethanol extract of *C. inodora* was evaluated for wound healing activity. The result showed that ethanol extract ointment possesses a definite pro-healing action. This was demonstrated by a significant increase in the rate of wound contraction and by enhanced epithelialization.

The results indicated that the dried methanol extract of the rhizomes was active against all the experimentally induced laboratory models of inflammation, pyrexia and wound healing.

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- **Antioxidative characteristics of ethanol and aqueous extracts of *Curcuma amada* rhizomes**

**Ram Kumar Sahu, Harideep Singh, Amit Roy.....41**

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#### **ABSTRACT**

The plants belonging to Zingiberaceae family are found to be a rich source of substances of phytochemical interest. *Curcuma amada* is one member of this family which is traditionally used as carminative and stomachic. The antioxidant activity of ethanol and aqueous extract of *Curcuma amada* rhizomes was studied. The antioxidant activity in vitro was measured by means of the 1, 1-diphenyl-2-picrylhydrazyl (DPPH), Nitric Oxide and Super oxide free radical scavenging assay. Ascorbic acid, a natural antioxidant, was used as a control. The extracts of ethanol and aqueous were strongly scavenged DPPH radical with the IC<sub>50</sub> being 265.33 and 217.90 µg/ml respectively. While the extracts of ethanol and aqueous were moderately scavenged superoxide radical with the IC<sub>50</sub> values of 526.87 and 440.89 µg/ml and moderately inhibited nitric oxide with the IC<sub>50</sub> values of 386 and 510.67 µg/ml. All the parameters were found to dose dependent.

**KEYWORDS:** *Curcuma amada*, DPPH, Superoxide, Nitric Oxide.

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- **Antibacterial and Wound Healing Activity of the Leaves of *Annona squamosa* Linn. (Annonaceae)**

**Chitra Shenoy, M B Patil and Ravi Kumar.....44**

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#### **ABSTRACT**

Natural remedies from medicinal plants are considered to be effective and safe alternative treatment for wounds. In traditional literature, it is found that *Annona squamosa* leaves were used as folk medicine for the treatment of wound in different parts of the world. The leaves of *Annona squamosa* (Linn.) were exhaustively extracted by soxhlet apparatus with different solvents like petroleum ether, solvent ether, chloroform, alcohol and chloroform water in ascending order of the polarity. All the five extracts were subjected to antibacterial screening by using the cup plate method. The petroleum ether, alcoholic and chloroform water extract showed maximum zone of inhibition. So these extracts were taken for wound healing activity. The petroleum ether extracts of *Annona squamosa* at a dose of 300 mg/kg b.w. (orally) in all models showed significant results. The percentage contraction of wound are at 18<sup>th</sup> day, was found to be (91.12±0.62, *P* < 0.05) in excision wound model, wound breaking strength (299.83 ± 5.446 grams, *P* < 0.05) in incision wound model, granuloma breaking strength (378.56 ± 5.520, *P* < 0.05) in granuloma studies. All the results were significant for different parameters in wound healing activity when compared with control group. Presence of sterols, flavonoids, tannins in various extracts was also confirmed by preliminary phytochemical investigation, TLC and HPTLC methods

**KEYWORDS:** *Annona squamosa*, wound healing activity, antibacterial activity, petroleum ether extract.

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- **Antimicrobial activity of *Saussurea lappa* Clarke Roots**

**Patil SM, Patil MB Sapkale GN and Umbare RP.....51**

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**ABSTRACT**

The Antimicrobial potential of *Saussurea lappa* Clarke. against certain microorganisms was studied using agar diffusion method. The aqueous and ethanolic extract of *S. lappa* roots significantly inhibited the growth of microorganisms as compared to standard bactericide and fungicide drugs. Diethyl ether fraction exhibited prominent fungicidal activity against *Candida albicans*. Gentamycin, Streptomycin and Fluconazole were used as positive controls.

**Keywords:** Microorganisms, *Candida albicans*, Bactericide, Gentamycin, *Saussurea lappa*

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- **Formulation And Evaluation Of The Tablets Prepared With Chloroform Extract Of *Pandanus Fascicularis* Lamk. Leaves**

**Prabhudutta Panda, Maitrayee Panda, Siva Shankar Nayak and Durga Prasad Panda.....54**

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**ABSTRACT**

The pharmacological evaluation of the chloroform extract of *Pandanus fascicularis* Lamk. leaves was found that it is having antinociceptive and anti-inflammatory properties, and contains the phytoconstituents viz., steroids, terpenoids, flavonoids, saponins and tannins. Therefore tablets were formulated with the extract by wet granulation method. The mechanical properties of the tablets like crushing strength and friability were assessed. The drug release properties were evaluated by using *in-vitro* disintegration and dissolution methods. There were statistically significant differences ( $p < 0.01$ ) in the crushing strength friability ratio (CSFR) of the tablets. The differences in drug release depend on the types and concentration of the excipients and the binders employed in the formulation. PVP, gelatin and corn starch were used in different concentrations i.e. 1% w/w and 4% w/w with purified water as binder solutions, for the preparation of tablets. The ranking of crushing strength values for tablets was PVP > gelatin > corn starch. The CSFR values also increased with increasing compression force and concentration of binders employed. The ranking of CSFR values for tablets was PVP > gelatin > corn starch. The dissolution time and  $t_{80}$  (time required for 80% release of the extract) were studied with Double beam UV-VIS Spectrophotometer at 271 nm. The ranking of disintegration and dissolution times exhibited by tablets was PVP > gelatin > cornstarch. There was no change in mechanical and drug release properties of the tablets after storage at temperature of  $30 \pm 2$  °C and relative humidity of  $75 \pm 5\%$  for twelve months.

**KEYWORDS:** *Pandanus fascicularis* Lamk. leaves, chloroform extract, tablets, *in-vitro* evaluation

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- **Effect of Ethanolic Extract of *Borassus flabellifer* L. Male Flowers (Inflorescences) on Chemically Induced Inflammation in Wistar Rats.**

**Sachin R Patil, MB Patil, Ravi Kuma and Mahesh S. Paschapur.....59**

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**ABSTRACT**

**Objective:** The present study is designed to investigate anti-inflammatory activities of ethanolic extract of male flowers (inflorescences) of *Borassus flabellifer* L. (Arecaceae).

**Methods:** Acute inflammation models like histamine-induced and egg-albumin-induced rat paw edema model and xylene induced ear oedema in mice were employed to investigate the anti-inflammatory activity. The biochemical parameters like serum glutamate pyruvate transaminase (SGPT), serum glutamate oxaloacetate transaminase (SGOT), lipid per oxidation and alkaline phosphatase (ALP) were also estimated as supportive study.

**Results:** The extract at doses 150mg/kg b.w. and 300mg/kg b.w. and diclofenac sodium (standard) showed significant anti-inflammatory in all the models, as compared to control ( $p < 0.0001$ ). The extract and standard drug also showed significant ( $p < 0.0001$ ) results for biochemical parameters.

**Conclusion:** The results of the present further confirm the use of *Borassus flabellifer* L. traditionally for the treatment of painful inflammatory conditions.

**KEY WORDS** *Borassus flabellifer* L., inflorescences, male flowers, anti-inflammatory, histamine, egg-albumin, SGOT, SGPT, Lipid per oxidation, ALP.

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- **Evaluation of Antimicrobial Activity of *Casuarina equisetifolia* Frost (Casuarinaceae)**

**Anil Kumar Aher, Subodh Pal, Sadahev Yadav, Umesh Patil and Snehendru Bhattacharya.....64**

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**ABSTRACT**

The crude methanolic extracts of bark, wood, leaf and fruits of *Casuarina equisetifolia* and chromatographically isolated compounds were studied for antibacterial and antifungal activity by Cup and Plate method. Various parts of plant were collected from near by Nashik region identified as *Casuarina equisetifolia* Linn Family Casuarinaceae by P. S. N. Rao, Joint Director, Botanical Survey of India, Pune (M.S.). The plant materials were dried in oven at 40 °C. The structures of isolated compounds were confirmed by spectroscopic techniques. The compounds ANA 01, ANA 02 and ANA 04 were confirmed as Catechin, Ellagic acid and Gallic acid from bark; Quercetin (ANA 03) and (ANA 05) Lupeol were characterized from leaf and fruit respectively. The screenings of antibacterial and antifungal activities of isolated compounds were compared with Ampicillin (10units/disc) and Ketokonazole (10units/disc).

The isolated compounds ANA01-05 have shown activity against Gram negative bacteria and less activity against Gram positive bacteria. Among these, ANA04 (Gallic acid) and ANA05 (Lupeol) have shown good activity against Gram-negative (*E. coli* and *Pseudomonas aeruginosa*) bacteria.

Methanolic extracts of wood, bark and fruit has shown good activity (10.0, 12.0 and 10.0 mm respectively) against Gram positive microorganisms (*Staph. aureous*) while the extracts were without any effect against Gram negative microorganism. Fruit extract has resulted in good antifungal activity against *Candida albicans*. Lupeol was isolated from fruit which has shown similar (8.0 mm) antifungal activity.

**KEY WORDS:** - *Casuarina equisetifolia*, Antibacterial, Antifungal, Cup and Plate method.

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- **Analgesic activity of *Tamarindus indica***

**NS Dighe, SR Pattan, SA Nirmal, RS Kalkotwar, VM Gaware and MB Hole.....69**

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**ABSTRACT**

*Tamarindus indica* (Caesalpiniaceae) bark is used in the treatment of pain traditionally, present work was undertaken to prove this scientifically by using suitable animal screening models as hot plate test and acetic acid induced writhing test at the dose of 50 mg/kg, i.p. Petroleum ether extract showed significant increase in reaction time as compared to other extracts. Preliminary phytochemical test showed presence of sterols and triterpenes in the extract; hence these compounds might be responsible for analgesic activity.

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- **In Vitro Cytotoxic Activity of Leaves of *Abutilon indicum* Linn. Against Ehrlich Ascites Carcinoma and Dalton's Ascitic Lymphoma Cell Line.**

**AV Bondre, SC Akare, P Mourya, AD Wanjari, PS Tarte, and GV Paunikar.....72**

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**ABSTRACT**

Alcohol and aqueous extracts from the leaves of *Abutilon indicum* Linn. Were investigating for their cytotoxic activity against EAC and DLA cell line. Various concentrations (10-200µg/ml) of each extract were treated in trypan blue method. Which involved determination of number of dead cells/total 100 cells counted gives the percentage of cytotoxicity was calculated. Both the extract exhibited significant cytotoxic activity at higher concentration of 200µg/ml. Distilled water used as a control.

**KEYWORDS:** *Abutilon indicum*, cytotoxic activity, Ehrlich Ascites Carcinoma (EAC), Dalton's Ascitic Lymphoma (DLA).

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- **Studies on Antimicrobial Activity of *Boswellia serrata*, *Moringa oleifera* and *Vitex negundo*: A comparison**

**Trapti Rastogi, Deepali S Ghorpade, UA Deokate and SS Khadabadi.....75**

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**ABSTRACT**

Ethanollic extracts of gum resin of *Boswellia serrata*, bark of *Moringa oleifera* and leaves of *Vitex negundo* were subjected to preliminary screening for antimicrobial activity .All ethanollic extracts exhibited significant anti-microbial activity comparable to the standard drug tetracycline. The mixture of all three extracts together in equal concentration shows more inhibitory zone as compared to other extracts.

**KEYWORDS:** *Boswellia serrata* ,*Moringa oleifera*,*Vitex negundo*, Antimicrobial.

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## Short Communication

- Anthelmintic activity of *Smilax zeylanica* leaf.

Qureshi Md. Shamim, Giri IC, Panday VK, Choudhary R and Patel J .....77

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### ABSTRACT

Petroleum Ether, diethyl ether, chloroform, and alcoholic extract of leaves of *Smilax zeylanica* were evaluated separately for anthelmintic activity on adult Indian earthworms, *Pheretima posithuma*; the results revealed that the alcoholic extract produced significant anthelmintic activity. The activities are comparable with the reference drug Piperazine citrate.

**KEYWORDS:** Anthelmintic activity, extracts, *Pheretima posithuma*, Piperazine citrate.

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