SHORT COMMUNICATIONS

Antimicrobial Activity of *Notonia Grandiflora* DC (Asteraceae)

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The *In vitro* antibacterial activity of *Notonia grandiflora* (whole plant) has been investigated against *Staphylococcus aureus, Shigella shigae, Salmonella typhi, Escherichia coli, Pseudomouas aeruginosa* and *Proteus mirablis*.The essential oil of the fresh plant at 1:10 dilution showed good activity against *S. aureus, S. shigae* and *P. mirablis* almost comparable to the standard antibiotic used.The hexane extract showed good activity and the alcohol extract showed feeble activity against *P. mirablis*. Friedelin isolated from the hexane extract of the plant showed activity at 1000 ppm against this organism.

Literature search reveals N. *grandiflora* to posses feeble aperient property and is used as a cure for pimples[1]. The plant is supposed to be a remedy for hydrophobia though its efficacy has not been established. Lupeol, β-sitosterol, succinic acid, kaemferol-3,7-dirhamnoside, kaempferol-3-rhamnoside, friedelin, lupenone, epifriedelenol and β-sitosterol-β-D-glucopyranoside have been reported from this plant[2-4]. Its antibacterial efficacy has not been investigated. This communication reports the antibacterial activity of this plant.

The plant was collected in and around Chennai during February 1998. The Botany department of Captain Srinivasa Murthi Drug Research Institute for Ayurveda (CSMDRIA) indentified it. The whole plant was cut, dried and coarsely powdered.The powdered plant was extracted with hexane and then with ethanol (95%) using a Soxhlet extractor. The extracts were concentrated to dryness in *vacuo*. The hexane extract was chromatographed over silica gel (100-200 mesh, ACME) eluted with hexane and friedelin was isolated. The fresh plant was cut and macerated with water and subjected to steam distillation and the distillate was extracted with ether to yield the essential oil (0.04%).

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Solutions of the extract and essential oil were made in DMSO. Different dilutions were made using the same solvent for required concentrations. The antibacterial activity was assayed by disc diffusion method and the disc diameter was 6 mm[5]. The *in vitro* screening was carried out using *Staphylococcus aureus, Shiggella shigae, Salmonella typhi, Escherichia coli, Pseudomonas aeruginosa* and *Proteus mirablis*.

Tetracycline (30 μg/disc) was used as a standard. The essential oil exhibited good activity at 1:10 dilution (17 mm) and against *P. mirablis* at 1:100 dilution (11 mm). The essential oil at 1:10 dilution showed activity against *S. aureus* (10 mm) and *S. shigae* (14 mm) equating almost with the standard. The alcohol extract is almost resistant to all the strains tested. The hexane extract showed mild activity and alcohol extract, very feeble activity against *P. mirablis*. Friedelin isolated from the hexane extract showed sensitivity (13 mm) at 1000 ppm against this bacteria, a causative organism for urinary tract infection almost equating with the standard (16 mm)

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New Spectrophotometric Methods for the Determination of Meloxicam

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Two Simple and sensitive spectrophotometric methods, A and B have been developed for the determination of meloxicam and its dosage forms. Meloxicam forms stable green coloued chromogen with ferric chloride and potassium fericyanide exhibiting maximum absorption at 770 nm (method A) that shows linearity in concentration of 0.25-2.5 μg/ml. In method B, meloxicam forms blue coloured complex on treatment with Folin Ciocalteu reagent, showing maximum absorption at 740 nm. The chromogen obeys Beer's law in the concentration range of 5-15 μg/ml.

Meloxicam is 4-Hydroxy-2-methyl-N-(5-methyl-2-thiazolyl)-2H-1,2-benzo-thiazine-3-carboxamide-1,1-dioxide and is used as a non-steroidal antiinflammatory agent[1]. It acts by inhiniting cycloxygenase-2[2]. Literature survey revealed different analytical methods for the estimation of meloxicam including UV[3,4,6], HPLC[4,5] and TLC densitometry[6]. In the present investigation, meloxicam was found to form a stable green chromogen with ferric chloride and potassium ferricyanide that shows maximum absorption at 770 nm in the first method (method A). In the second method (method B), meloxicam formed a stable blue chromogen on treatment with Folin Ciocalteu reagent (FC reagent) in presence of 1 N NaOH and shows maximum absorption at 740 nm.

All reagents used were of analytical grade. Solutions of ferric chloride (0.1 M), potassium fericyanide (0.1% w/v), sodium hydroxide (1 N) and FC reagent (I N) (Loba Chemie, Mumbai) were prepared in distilled water. Spectral and absorbance measurements were made on a Systronics UV/Vis spectrophotometer model 117. The stock solution of meloxicam (1 mg/ml) (pure drug or formulation) was prepared in 1N NaOH and further suitable dilutions were made with distilled water to get working standard solution of 10 ug/ml for method A and 50 μg/ml for method B.

In the method A, samples of meloxicam ranging from 0.25 to 2.5 ml (1 ml=10 μg) were taken in a series of 10 ml volumetric flasks, 2 ml of feric chloride (0.1 M) and 2 ml of potassium ferricyanide (0.1%) were successively added and shaken well. An appropriate volume of distilled water was addded to each flask to bring the total volume to 10 ml. The absorbance of green coloured species formed was measured at 770 nm against reagent blank and the amount of meloxicam present in the sample solution was computed from its calibration curve.

Volumes of standard meloxicam solution ranging from 0.25 ml to 3 ml (1 ml = 50 μg) were transferred into a series of graduated test tubes in the method B. One and

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