

TABLE 2: STATISTICAL ANALYSIS OF ESTIMATION OF AMOXYCILLIN AND CLOXACILLIN

Sample	*S.D		**C.V		* <sup>t</sup> <sub>cal</sub>	
	<sup>b</sup> AX	<sup>c</sup> CX	<sup>b</sup> AX	<sup>c</sup> CX	<sup>b</sup> AX	<sup>c</sup> CX
Capsule 1	0.9533	0.6236	0.3824	0.2498	1.380	1.0277
Capsule 2	0.6798	0.2054	0.2719	0.0821	0.1783	1.940
Capsule 3	1.0801	0.8498	0.4329	0.3397	0.8017	0.3261
Capsule 4	0.6236	0.6649	0.2492	0.2669	0.4450	2.006

\*Standard deviation, \*\*coefficient of variation <sup>a</sup>calculated 't' value by proposed method, theoretical values at 95 % confidence limit, 't' 2.57. <sup>b</sup>amoxycillin, <sup>c</sup>cloxacillin

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## Antimicrobial Activity of *Cocculus hirsutus* (Linn)

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**The *in vitro* antibacterial activity of the extracts and isolates of *Cocculus hirsutus* (root) has been studied against *Bacillus subtilis* and *Escherichia coli*. The total methanol extract, total alkaloid mixture and the two isolates have shown significant activity against the organisms used, almost comparable with the standard antibiotics, benzyl penicillin and streptomycin. This *in vitro* testing also resulted in activity guided isolation of two antibacterial principles from the root.**

*Cocculus hirsutus* belonging to the family Menispermaceae is a semi-woody climber growing wild across our country<sup>1</sup>. It is highly valued in the indigenous system of medicine. Leaf juice is a soothing application in certain skin diseases and also indicated in gonorrhoea, leu-

orrhoea and menorrhagia. Root infusion is a refrigerant and an antiperiodic<sup>2</sup>. Phytochemical and pharmacological studies have been conducted on the whole plant, stems and leaves. Ginnol,  $\beta$ -sitosterol, trilobine, isotrilobine, coclaurine, magnoflorine, jantinine, shaheenine, cohirsitine, hirsutine, cocsuline-N-2-oxide, cohirsinine and hirsudiol have been reported from this plant<sup>3-8</sup>. The roots have not been studied extensively for chemical constituents. This communication reports the antibacterial activity

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TABLE 1: ANTIMICROBIAL ACTIVITY OF EXTRACTS AND ISOLATES OF *COCCULUS HIRSUTUS* (ROOT).

Material tested	Dose loaded (µg)	Zone of inhibition(mm)*±SE	
		<i>B. subtilis</i>	<i>E. Coli</i>
TME	100	-	-
	500	15.5±0.165	12±0.132
TE	1000	-	-
CE	1000	9±0.145	8±0.058
EA	1000	10±0.165	9±0.077
BE	1000	9±0.118	8±0.153
ME	1000	10±0.026	10±0.121
MW	1000	16±0.181	16±0.113
	50	11±0.106	14±0.112
TA	100	12±0.118	15±0.097
	500	15±0.145	14±0.058
	1000	16±0.131	14±0.036
S <sub>1</sub>	50	-	-
	50	11±0.063	10±0.132
S <sub>2</sub>	100	14±0.056	13±0.145
	500	18±0.045	17±0.162
	1000	19±0.102	19±0.097
S <sub>3</sub>	50	9±0.112	7±0.112
	100	11±0.097	8±0.165
	500	12±0.077	10±0.135
	1000	14±0.034	12±0.124
S <sub>4</sub>	50	-	-
	0.15	17±0.181	-
	0.2	19±0.097	-
Benzyl penicillin	0.25	21±0.054	-
	2.5	36±0.118	-
	5	36±0.045	-
Streptomycin	45	-	11±0.045
	90	-	12±0.032

\*Inclusive of cup diameter of 7 mm. All values are average of four determinations. Extracts-TME - total methanol extract, TE -toluene extract, CE -chloroform extract, EA-ethylacetate extract, BE - butanol extract, ME -methanol extract, MW-50:50 methanol, water extract, TA -total alkaloids. S<sub>1</sub>, S<sub>2</sub>, S<sub>3</sub> and S<sub>4</sub> are isolates. Values showed significant difference from solvent controls at P<0.001 using student's 't' test.

of the methanol extract of root of *Cocculus hirsutus* and isolated compounds. The structural elucidation of the isolated compounds is in progress.

The plant was collected from Kakatiya University Campus, identified by the University Botany Department and a voucher specimen was deposited at the Pharmacognosy Laboratory of University College of Pharmaceutical Sciences for reference. Roots were separated immediately from the collected whole plants, cleaned, dried in shade, broken in pieces, and powdered in an electrically driven cutter mill. The powder was passed through No. 10 mesh and then extracted with methanol by cold maceration. The extract was filtered under reduced pressure and dried *in vacuo*. A part of the total methanol extract (TME) was chromatographed over silica gel (60-120 mesh, CDH, Bombay). The column was eluted successively with toluene, chloroform, ethyl acetate, butanol, methanol and 50:50 mixture of methanol and water to yield the respective fractions.

A portion of the TME was processed for the isolation of alkaloids<sup>9</sup>. The TLC pattern of the resultant total alkaloid mixture (TA) showed the presence of four alkaloids. When developed with toluene: ethyl acetate: diethylamine (70:20:10), the R<sub>f</sub> values of the four alkaloidal spots were 0.66 (S<sub>1</sub>), 0.53 (S<sub>2</sub>), 0.44 (S<sub>3</sub>) and 0.31 (S<sub>4</sub>). Preparative TLC method was used for the isolation of S<sub>1</sub>, S<sub>2</sub>, S<sub>3</sub> and S<sub>4</sub>. The antimicrobial activity was done in three phases for the activity guided isolation of antimicrobial principles. In the first phase, TME, its fractions, and TA were studied for antibacterial activity by cup plate method against *B. subtilis* and *E. coli*<sup>10</sup>. In the second phase, the dose dependant antibacterial response of TA was studied. In the third phase, S<sub>1</sub>, S<sub>2</sub>, S<sub>3</sub> and S<sub>4</sub> were evaluated for their antibacterial activity. Dimethyl formamide was used as a solvent for preparing solutions of the extract and isolates. Benzyl penicillin and streptomycin were dissolved in dimethyl formamide and sterile water respectively, and were used as standards. The results of the three phases are summarized in Table 1. All the extracts exhibited antibacterial activity except toluene extract (TE). It is evident from the results that S<sub>2</sub> and S<sub>3</sub> have exhibited significant antibacterial activity and the response was dose related. Student's 't' test was applied to each group of 4 determinations against the values of the solvent control. The difference between the means was significant at P<0.001. The antibacterial activity of S<sub>2</sub> (500 µg) is comparable to that of benzyl penicillin (0.15 µg) on *B. subtilis* while the antibacterial activity of S<sub>3</sub> (1 mg) is com-

parable to that of streptomycin (90 µg) against *E. coli*.

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## General Prescribing Pattern of Antihypertensive Drugs in Patients Attending a Nagpur City Hospital

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The study was carried out to assess prescribing practice and general trend of hypertension among patients at Orange City Hospital and Research Institute, a tertiary critical care hospital, Nagpur. Prescription and complete records of hypertensive patients were monitored and data was filled as per WHO prescription auditing proforma. The study revealed that hypertension was mild (diastolic pressure 90-104 mm of Hg) in maximum number of patients (80.0 %). Both monotherapy (55.0 %) and combination therapy (45.0 %) were employed for the patients. Among monotherapy  $\beta$ -blockers and calcium channel blockers were mainly prescribed. Among combination therapy, two-drug combination (23.33 %) was most often prescribed and combination of  $\beta$ -blockers and calcium channel blockers was common. Highest prevalence of disease was found in the age group of 50-59 years. The study highlighted the current trend of prescribing antihypertensive drugs in Orange City Hospital and Research Institute, Nagpur.

Hypertension, defined as elevation of systolic and diastolic blood pressure to about 140/90 mm of Hg, afflicts up to 75-80% people; it is thus most common cardiovascular disease<sup>1</sup>. It is the most treatable risk factor for cardiovascular diseases, congestive heart failure, coronary artery dis-

eases and renal failure. The various causes of hypertension can be listed as high salt intake, smoking and alcoholism, obesity, stressful life, renal, vascular and endocrine diseases, pregnancy induced hypertension and others.

Hypertension is subdivided into three categories based on the elevation of diastolic pressure as mild hypertension (90-104 mm of Hg), moderate hypertension (105-114 mm of Hg) and severe hypertension ( $\geq 115$  mm of Hg)<sup>1</sup>. There

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