

carotene,^[3] which might possibly be responsible for the reduction of lipid peroxidation produced by it in the present study. As there are several limitations in the measurement of MDA by the TBA method, GSH, GPx, GR, GST and catalase along with MDA and SOD are needed to be evaluated in future studies to prove the effect of *Vitex negundo* on oxidative stress. The limitation of the present study was that no positive control was taken. This is the first report which has indicated that VN can produce reduction of oxidative stress mainly by reducing lipid peroxidation, which needs to be substantiated by a detailed study.

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V. Tandon, R. K. Gupta*

Postgraduate Department of Pharmacology and Therapeutics,
GMC, Jammu - 180 001, *Department of Pharmacology,
M.G.I.M.S. (Sevagram), Wardha, India
E-mail: dr_vishaltandon@yahoo.com

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Self-medication among urban population of Jammu city

Sir,

Self-medication can be defined as obtaining and consuming drugs without the advice of a physician either for diagnosis, prescription or surveillance of treatment.^[1] There is a lot of public and professional concern about the irrational use of

drugs. In developing countries like India, easy availability of a wide range of drugs coupled with inadequate health services result in increased proportions of drugs used as self medication compared to prescribed drugs.^[2] Although, OTC (over the counter) drugs are meant for self medication and are of proved efficacy and safety, their improper use due to lack of knowledge of their side effects and interactions could have serious implications, especially in extremes of ages (children and old age) and special physiological conditions like pregnancy and lactation.^[3,4] There is always a risk of interaction between active ingredients of hidden preparations of OTC drugs and prescription medicines, as well as increased risk of worsening of existing disease pathology. As very few studies have been published regarding self medication pattern in our community, therefore, we conducted this cross-sectional study in 600 urban families living in Jammu city to evaluate their self medication practices.

Nuclear families were selected randomly by stratified sampling and Jammu city was arbitrarily divided in 10 sections and 60 families were randomly selected from each section. The families under study were further classified into two classes; class-A with head of the family having qualification more than 12th standard and class-B with qualification less than 12th standard. A family having another member with qualification more than 12th standard was also included in the class-A even if the head was not qualified up to the 12th standard. 380 families were included in class-A and 220 families in class-B. A simple questionnaire was prepared and each family was interviewed only once in the local language. At least two members of the family (including head of the family and excluding children below 12 years and mentally sick persons) were interviewed together after obtaining their consent. The questionnaire was filled by a qualified assistant. The questionnaire contained the questions pertaining to identifications data (name of head of the family, number (no.) of children, no. of adults, address, qualifications, employment, income), practice of self medication by the family, commonly used drugs as self medication, knowledge of the family regarding dose, duration, side effects and interactions of the drugs in use, source of information about the drug, attitude towards allopathic, ayurvedic and homeopathic medicines and a recall period of one year was kept. In the end of the study all the data was collected and analysed (Table 1 and Table 2). All the parameters were compared between class-A and class-B using Chi-square test and *P* values <0.05 were considered statistically significant.

A trend towards self medication in adults was seen both in class-A and class-B. However, use of self medication was significantly more in class-B than class-A (Table 2). Previous studies have shown the prevalence of self-medication as 37% in urban population and 17% in rural population in India;^[5] where as 12.7% to 95% in other developing countries.^[2,6,7] In class-A NSAIDS (non-steroidal antiinflammatory drugs) were widely administered as self medication followed by ORS (oral rehydration solution) /antimotility drugs, cough/cold remedies and antibiotics; whereas, cough and cold remedies were widely used drugs in class-B followed by NSAIDS, vitamins, ayurvedic drugs, H₂ blockers/proton pump inhibitors/antacids and ORS/antimotility drugs.

Present study also indicated low knowledge about dose/

Table 1**Drug utilization pattern in the study population as self medication**

Drug	Class A (n=380) N (%)	Class B (n=220) N (%)	P-value
Vitamins	110(29)	110(50)	<0.0001
NSAIDS	326(86)	125(57)	<0.0001
PCM	86	50	
Nimesulide	58	10	
Diclofenac	25	25	
Ibuprofen	10	45	
Others	15	-	
Cough/cold remedies	156(41)	200(91)	<0.0001
Antibiotics	120(32)	25(11)	<0.0001
Ciprofloxacin	30	9	
Norfloxacin	30	10	
Amoxycillin	30	8	
Cotrimoxazole	15	8	
Cefadroxyl	20	-	
Others	15	-	
H ₂ -blockers /PPI/antacids	62(16)	80(36)	<0.0001
ORS/antimotility drugs	202(53)	76(35)	0.086
Birth control pills	16(4)	30(14)	0.0006
Homeopathic drugs	22(6)	20(9)	0.4259
Ayurvedic drugs	58(15)	150(68)	<0.0001

n=number of families, NSAIDS = nonsteroidal anti-inflammatory drugs, PPI= proton pump inhibitors, ORS= oral rehydration solution, PCM=paracetamol, N(%)=number(percentage).

duration, side effects and interactions of commonly used drugs both in class-A and class-B in accordance with reports of the previous studies.^[8,9] Their knowledge about the above parameters was extracted by asking direct questions or indirectly by enquiring about the drug use in sub-therapeutic dose for inadequate period or over use of drugs, use of drugs with a potential to aggravate the existing pathology for which it is used (NSAIDS for epigastric pain, use of cold and cough remedies containing sympatho-mimetic drugs by hypertensive and diabetic patients, use of antimotility drugs for diarrhea/dysentery in children, use of hormonal pills by hypertensive or diabetic women) and concomitant use of drugs with potential interactions (NSAIDS and antihypertensive drugs or iron /calcium preparations and antimicrobials or irrational drug combinations). However, the knowledge regarding dose/duration of drug therapy, adverse drug reaction and drug interaction was significantly more in class-A than class-B. Even in developed countries like USA, it has been seen that the misuse of non-prescription drugs causes tens of thousands of unnecessary hospitalizations each year.^[10] In a drug utilization study in USA, it was found that medications that are contraindicated in pregnancy were used at unexpectedly high rate as OTC drugs in obstetric population.^[11]

There was a trend towards use of ayurvedic and homeopathic drugs in both class-A and class-B for chronic illnesses like joint pains, acid peptic disease, bronchial asthma, obesity, impotence, baldness and female infertility. Moreover, herbs and homeopathic drugs were considered safe and devoid of adverse effects, but the risk of possible drug interactions is

Table 2**Pattern of self medication in the study population**

Parameter	Class A (n=380) N (%)	Class B (n=220) N (%)	P-value
Self medication in:			
Adults	266(70)	180(82)	<0.0001
Children	148(39)	150(68)	<0.0001
Chronic diseases	84(22)	70(32)	0.0604
Belief in:			
Allopathic S	330(87)	80(36)	<0.0001
Ayurvedic S	60(16)	120(55)	<0.0001
Homeopathic S	18(5)	20(9)	0.226
Source of information:			
Friends	50(13)	50(23)	<0.0001
Doctor	246(65)	45(20.4)	<0.0001
Drug-adv.	116(31)	40(18)	0.0129
Chemist/paramedics	64(17)	120(54.5)	<0.0001
Knowledge about:			
Dose/duration	162(43)	25(11)	<0.0001
Side-effects	104(27)	-	
Drug interactions	10(3.8)	-	
ADR reported:			
EGD	38(10)	11(5)	0.614
Sedation	23(6)	18(8)	0.958
Rashes	15(4)	9(4)	-
Diarrhoea	19(5)	11(5)	-
Reasons for self medication			
(a) Poor quality of care in government hospitals / dispensaries.	108 (28)	97(44)	
(b) High cost of consultation of private doctors.	180(47)	114(52)	
(c) Lack of time to visit doctors.	162(43)	48(22)	
(d) Doctors advise not needed for common illness.	43(11)	66(30)	

n=number of families, S= system of medicine, adv.=advertisement, N(%)=number(percentage), ADR=adverse drug reactions, EGD=epigastric discomfort.

always with their use.^[12] However, no serious side effect was reported with drugs used as self medication except for few episodes of epigastric discomfort, sedation, rashes and diarrhea with the use of NSAIDS, cough and cold remedies and antibiotics respectively in both the classes.

In the present study doctors were found to be the most common source of drug information in class-A where as paramedics/chemists were the most common source of drug information in class-B. These are in concordance with earlier reports.^[13,14] Drug advertisements were also an important source of drug information. Although, patient's use of advertised medicines could have important health benefits if used appropriately in the early stages of disease, many advertised products are 'lifestyle drugs', symptomatic treatments and may relieve only the discomfort and are likely to result into increased complications and hospital admissions as a result of uncontrolled disease pathology. Studies of pharmaceutical practice in India have called attention to the role played by pharma-

cists and pharmacy attendants in fostering self-medication and medicine experimentation among the public.^[15] It is argued that the economic rationale and the symbiotic relations that exist between doctors, medical-representatives, medicine wholesalers and retailers, need to be more closely scrutinized by those advocating rational drug use.

Patient satisfaction with the healthcare provider, cost of the drugs, educational level, socioeconomic factors, age and gender are the important factors influencing self-medication.^[16] Our study clearly indicated the variation in self medication pattern with education status. However, we could not consider the socioeconomic variations in our study, because of difficulty in assessing the true income of the family due to varied and multiple sources of income of majority of the families. Moreover, failure on our part to consider age and gender variations was due to non-availability of all the members at the time of interview, which could be considered as lacuna of our study. However, respondents were very cooperative and answered all the questions in detail. The most common reason for indulging in self medication was given high cost of private doctor's consultations in both the classes (Table 2). Our study presented self medication pattern in a set of urban population, but the condition could be more worst in rural or remote corners of India, where the people are deprived socially, economically and educationally with scarce health facilities.

Self-medication, using non-prescription drugs, could be beneficial to patients, healthcare professionals, the pharmaceutical industry and governments, provided these drugs are used rationally. Apart from community education, safety and efficacy of OTC drugs must be assured, so that these products could be safe even in the event of improper use. For registration as an OTC drug, specific efficacy trials may be conducted in real self-medication situation. FDA has strongly advocated that labeling of the OTC drugs should be easy to understand by the consumer and should contain the list of active ingredients, warnings, directions and inactive ingredients.^[10] Easy availability of wide range of drugs without prescription of registered practitioner in our country is the major factor responsible for irrational use of drugs as self medication, thus resulting into impending health problems (antimicrobial resistance, increased load of mortality and morbidity) and economic loss. The need for promoting appropriate use of drugs in health care system is not only because of the financial reasons with which policy makers and manager are usually most concerned, but also for health and medical care of patients and the community. There is need for authorities to make the existing laws regarding OTC drugs strong to ensure their rational sale and use. Moreover, specific pharmacovigilance is needed and the patient, pharmacist and physician must be encouraged to report any adverse events. Periodic studies on the knowledge, attitude and practice of self medication may give insight into the changing pattern of drug use in societies.

Anexure 1

Questionnaire used for assessing pattern of self-medication.

1. Name of head of the family.
2. How many children and adults are in the family?
3. What is your full residential address?

4. What is the qualification and occupation of adults in the family?
5. What is the monthly income of the family?
6. Has any member (adult or child) taken drug without doctor's advice in the preceding one year?
7. Name the drugs commonly used by you or other member of your family as self medication in the preceding one year.
8. Do you have any knowledge about dose, duration of therapy, side-effects and interactions of the drugs in use?
9. What is the source of information about drugs? Friends, doctor, drug-advertisements, chemist/paramedics or any other.
10. Do your family members believe in ayurvedic medicine, homeopathic medicine or allopathic medicine?
11. Name illnesses for which any member of your family have used ayurvedic or homeopathic medicine.
12. Are you satisfied with the health care facilities available?
13. Have you or any other member of your family ever experienced any adverse effect with drugs taken as self medication in the preceding one year?
14. What is the reason for indulging in self medication by your family?

R. Sharma, U. Verma, C. L. Sharma*, B. Kapoor

Departments of Pharmacology and Therapeutics, Govt. Medical College, Jammu. *Armed Medical Corps, India
E-mail: drrashmi@india.com

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Modulatory effect of *Plectranthus amboinicus* Lour. on ethylene glycol-induced nephrolithiasis in rats

Sir,

Nephrolithiasis is worldwide in distribution and affecting 2% of the world population.^[1] In order to find a herbal remedy for this disease, the present study was undertaken to evaluate the antilithiogenic activity of the concentrated fresh juice of the leaves of *Plectranthus amboinicus* Lour. It is popularly known in English as Indian borage, syn. *Coleus amboinicus* (Family: Lamiaceae). Indians use it widely for various illnesses, including kidney stone.^[2] It is scientifically evaluated for its antibacterial^[3] and antioxidant activity.^[4]

The fresh plants of *P. amboinicus* were collected from the herbal garden, Avinasilingam Deemed University, Coimbatore and authenticated at the botany department. About 500 g of fresh leaves were cut to small pieces and fresh juice was prepared adding water (30 ml), with the help of mixer. The fresh juice was filtered and concentrated to a dry mass by vacuum distillation; black dry residue was obtained (16 g). The LD₅₀ was done using OECD guideline for testing of chemicals revised draft guideline 423. The one tenth of the LD₅₀ 500 mg/kg was chosen as a dose for the further study.

Adult male albino rats of the Wistar strain, weighing between 150-200 g were used for this study. Animals were acclimatized and maintained at 24°C ± 2°C, 70% RH and 12h/12h light and dark cycle throughout the study. They were fed with standard pellet diet (Hindustan liver limited, Bangalore, India) and water *ad libitum*. The CPCSEA and the local ethical committee approved the studies. The animals were divided into three groups G1, G2, and G3 of six animals each. Following the method of Tamilselvan,^[5] nephrolithiasis was induced. Group 1(G1: control) was fed with ordinary drinking water. Group 2(G2: lithiogenic control) were fed with 1% ethylene

glycolated water for 35 days. Group 3(G3: test group) were fed with 1% ethylene glycolated water and were simultaneously administered, by gastric tube, 500 mg/kg of concentrated fresh juice of the leaves of the *Plectranthus amboinicus* Lour for 35 days. On the 34th day all the animals were placed in metabolic cages and urine was collected for 24 hours and urine was analyzed for the presence of calcium, oxalate and total protein. Calcium,^[6] and total protein^[7] were estimated by an auto analyzer (Logotech s.r.l, tecno-168). Oxalates were analyzed by the method of Hodgkinson and Williams.^[8] On Day 35 the animals were sacrificed, the kidneys were excised, washed with cold saline, fixed in 10% formalin solution and subjected to histopathological studies.

The results are expressed as mean ± SEM. The data were subjected to one-way ANOVA followed by Turkey-Kramer multiple comparison tests. *P* values <0.05 were considered as significant.

Histopathological studies clearly revealed that the tissue samples from the control group (G1) shows tubules with single epithelial lining along the margin and were of normal size. In G2 (lithiogenic control), all the tubules showed the presence of crystals, there was marked dilatation of the tubules and total degeneration of the epithelial lining with infiltration of inflammatory cells into the interstitial space. In G3 (test Group) the specimen showed characters similar to the control group. Urine analysis showed a significant elevation of calcium, oxalates and total proteins level in the lithiogenic control group (G2), when compared to normal control. The test group (G3), showed a significant reduction in all the parameters almost comparable with normal control. The urine and histopathological results clearly revealed the antilithiogenic activity of *P. amboinicus*, particularly of calcium oxalate origin. Further research is needed to explore the exact active principle(s) responsible for the antilithiogenic activity and the mechanism of action.

M. Alvin Jose, Ibrahim, S. Janardhanan

Department of Pharmacology, Cherran's college of Pharmacy, Coimbatore - 641039, Tamil Nadu, India

E-Mail: pharmjose73@yahoo.co.in

Table 1

Effect of dried juice of the leaves of *Plectranthus amboinicus* Lour. on ethylene glycol-induced nephrolithiasis in male albino rats

Drugs	Dose	Urinary calcium Level (mg/dl)	Urinary oxalate Level (mg/dl)	Urinary total protein level (mg/dl)
Control (normal saline)	10 ml/kg	5.4±0.06	0.5±0.06	200±5.16
Lithiogenic control (ethylene glycol)	1% ethylene glycolated water	11.2±0.12	1.5±0.07	280±5.77
<i>P. amboinicus</i>	500 mg/kg	5.6±0.58**	0.8±0.06**	200±8.56**
One-way ANOVA	F	1613	65	48
	df	2,15	2,15	2,15
	P	<0.01	<0.01	<0.01

Values are mean ± SEM. n=6 in each group. ***P*<0.001 when compared to lithiogenic control.