# Effect of leaf juice of *Catharanthus roseus* Linn on cholesterol, triglyceride and lipoproteins levels in normal rats

*Catharanthus roseus* Linn (Apocyanaceae) is a herbaceous subshrub also known as Madagascar periwinkle, *Vinca rosea*, or *Lachnera rosea* worldwide. The leaves are used traditionally in various regions of the world including India, West Indies as well as Nigeria to control diabetes.<sup>[11]</sup> The leaves have been known to contain 150 useful alkaloids among other pharmacologically active compounds. Significant antihyperglycemic and hypotensive activity of the leaf extracts (hydroalcoholic or dichloromethane–methanol) have been reported in laboratory animals.<sup>[2]</sup> Fresh leaf juice of *C. roseus* has been reported to reduce blood glucose in normal and alloxan diabetic rabbits.<sup>[3]</sup> The present study was aimed at evaluating the effect of the leaf juice on cholesterol, triglyceride and proteins levels in rats.

Fresh leaves of *C. roseus* (red variety) were collected in July, 2003, from the Faculty of Pharmacy farm, University of Uyo, Uyo, Nigeria and authenticated by Dr. (Mrs.) Margaret Bassey, a taxonomist in Department of Botany, University of Uyo, Uyo. The leaves (2 kg) were crushed in a laboratory wooden mortar and squeezed by means of a fine cloth to separate the juice (13.6 ml). The juice was stored in a refrigerator at 4°C until used for the experiment.

Adult albino Wistar rats (180–220 g) of either sex were obtained from University of Uyo animal house. The animals were acclimatized for 10 days at room temperature ( $30\pm5^{\circ}$ C) and 50% humidity. They were maintained on standard animal pellets and water *ad libitum*. Permission and approval for animal studies were obtained from the College of Health Sciences animal ethics committee, University of Uyo.

The rats were randomly assigned on the basis of weight

into four groups of five animals each. Groups A-C received orally, the fresh leaf juice of C. roseus at 0.1, 0.5 and 1.0 ml/ kg/day, respectively, for seven consecutive days. The doses were determined based on a previous work on the plant.<sup>[3]</sup> The control group (Group D) received 3 ml/kg of normal saline orally. Twenty-four hours after the last dose, the animals were anesthetized with diethyl ether and blood collected through cardiac puncture into sample bottles devoid of anticoagulant. The samples were centrifuged at 1000 rpm for 10 min to obtain the sera. Serum total cholesterol, triglyceride and highdensity lipoprotein (HDL) levels were measured by enzymatic colorimetric methods using Quinica Clinica Aplicada, S.A. reagent kits. All samples were analysed with a Winelight-Unicam spectrophotometer. The concentration of low-density lipoprotein (LDL) and very low-density lipoprotein (VLDL) was calculated by the formula of Friedewald.<sup>[4]</sup>

Data are expressed as mean $\pm$ SEM. All data were statistically analysed using the one-way ANOVA followed by Tukey–Kramer post-test and P<0.05 was considered significant.

The leaf juice of *C. roseus* produced a significant decrease in serum total cholesterol, total triglyceride, LDL-cholesterol and VLDL-cholesterol of rats. [Table 1] The decreases were only significant (P < 0.05) at the highest dose of the juice (1.0 ml/kg) compared to control in the case of total cholesterol, triglyceride, LDL-cholesterol and VLDL-cholesterol. However, the level of HDL cholesterol was not altered by any of the doses studied.

In the present study, there was a significant reduction in the levels of total cholesterol, triglycerides, LDL and VLDL

#### Table 1

Effect of Catharanthus roseus Lea	f Juice on serum	lipoprotein levels in rats
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Group	Dose mg/kg (p.o.)	Total cholesterol	Triglyceride	HDL cholesterol	LDL cholesterol	VLDL cholesterol		
			(Mmol/I)					
Saline (control)	-	3.57 ± 0.13	2.64 ± 0.07	0.74 ± 0.07	3.35 ± 0.12	0.53 ± 0.02		
Leaf juice	0.1	3.33 ± 0.18	$2.53 \pm 0.08$	0.70 ± 0.05	$3.02 \pm 0.16$	0.51 ± 0.03		
Leaf juice	0.5	3.28 ± 0.05	2.45 ± 0.16	0.77 ± 0.05	$3.00 \pm 0.03^*$	$0.49 \pm 0.07$		
Leaf juice	1.0	3.05 ± 0.16*	$2.06 \pm 0.05^{*}$	$0.81 \pm 0.08$	$2.78 \pm 0.13^*$	$0.41 \pm 0.02^{*}$		
One-way	F	5.0	10.66	0.33	6.75	0.33		
ANOVA	Р	< 0.05	< 0.05	> 0.05	< 0.05	> 0.05		

cholesterol. This reduction in the levels of the LDL and VLDL could have resulted from the antioxidant effect of the fresh leaf juice of *C. roseus*, whose phytochemical components include flavonoid, which is known for antioxidant effect.<sup>[5]</sup> Further investigations are warranted to identify the hypolipidemic active principles and elucidate their mechanism of action.

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