

BIBLIOGRAPHY

- ชัยโณ พิษชาติ, ประยูร ดีมา, มุกดา ตฤชฌานนท์ และ อลัน อีชวาส "อภิปราย
เรื่องพิษ" วารสารกรมการแพทย์และอนามัย ปีที่ 2 ฉบับที่ 3 (2517) :
303-311, 329-330.
- Ahuja, M.L., Brooks, A.G., Veeraraghavan, N. and Menon, I.G.K.
"A Note on the Action of Heparin on Russell's Viper Venom"
Indian J. Med. Res. 32(2), (1946) : 317-322.
- Arthur, R.C., Harris, P.E., Hurst and Saker, B.M. "Renal Failure
After Snake Bite" Med. J. Aust. 2(11), (1967) : 409-411.
- Aung - Khin, M. "Histological and Ultrastructural Change of Kidney
in Renal Failure After Viper Envenomation" Toxicon 16
(1978) : 71-75.
- Bell, R.D., Mandal, A.K. and Paker, D.E. "The Effect of Splenectomy
on Renal Function in Epinephrine Induced Renal Failure"
Proc. Soc. Exp. Biol. Med. 167(1981) : 12-14.
- Bhat, R.N. "Viperine Snake Bite Poisoning in Jammu" J. Indian M.A.
63(12), (1974) : 383-392.
- Blair - West, J.R., Coghlan, J.P., Denton, D.A., Goding J.R., Munro,
J.A., Peterson, R.E. and Wintour M. "Humoral Stimulation of
Adrenal cortical secretion" J. Clin. Invest. 41(1962) :
1606-1627.
- Bruninga, G.L. "Complement : A Review of the Chemistry and Reduction
Mechanism" Am. J. Clin. Path. 55(1971) : 273-282.

- Chaiyabutr, N., Faulkner, A. and Peaker, M. "Effects of Starvation on the Cardiovascular System, Water Balance and Milk Secretion in Lactating Goat" Res. Vet. Sci. 28(1980) : 291-295.
- Chopra, R.N. and Chowhan, J.S. "Action of the Indian Daboia (*Vipera russellii*) Venom on the Circulatory System" Indian J. Med. Res. 21(3), (1934) : 493-506.
- Chugh, K.S., Aikat, B.K., Sharma, B.K., Dash, S.C., Mathew, M.T. and Das, K.C. "Acute Renal Failure Following Snakebite" Am. J. Trop. Med. 24(24), (1975) : 692-697.
- Chugh, K.S., Aikat, B.K., Sharma, B.K., Dash, S.C., Mathew, M.T. and Das, K.C. "Renal Lesion Following Envenomation of Russell's Viper" J. Med. Ass. Thailand 61 (1978) : 78.
- Culp, J.R., Erdos, E.G., Hinshaw, L.B. and Holmes, D.D. "Effects of Anti-inflammatory Drugs in Shock Caused by Infection of Living *E. coli* Cell" Proc. Soc. Exp. Biol. Med. 137(1971) : 219-222.
- Dunn, M.J. and Hood, V.L. "Prostaglandins and the Kidney" Am. J. Physiol 233(3), (1977) : F 169-F 184.
- Dunn, M.J. and Zambraski, E.J. "Renal Effects of Drug that Inhibit PG Synthesis" Kidney int. 18(1980) : 609-622.
- Erdos, E.G., Hinshaw, L.B. and Gill, C.C. "Effect of Indomethacin in Endotoxin Shock in Dog" Proc. Soc. Exp. Biol. Med. 125(1967) : 916-919.

- Feigen, L.P., Klainer, E., Chapnick, B.M. and Kadowitz, P.J. "The Effect of Indomethacin on Renal Function in Pentobarbital Anesthetized Dog" J. Pharmacol Exp. Ther. 198(2), (1976) : 457-463.
- Ffoulkes - Crabbe, D.J.O., Creighton, R.E., Volgyesi, G.A., Steward, D.J. and Nisbet, H.I.A. "The Effect of Splenectomy on Circulatory Adjustments to Hypoxemia in the Anesthetized Dog" Br. J. Anaesth. 48(1976) : 639-641.
- Frolich, J.C., Hollifield, J.W., Dormois, J.C., Frolich, B.L., Seyberth, H., Michelakis, A.M. and Oates, J.A. "Suppression of Plasma Renin Activity by Indomethacin in Man" Circ. Res. 39(1976) : 447-452.
- Ganguly, S.N. and Malkana, M.T. "Daboia Venom : Its Chemical Composition, Protein Fraction and Their Physiological Action" Indian J. Med. Res. 23(1), (1935) : 131-140.
- Gerber, J.G., Olson, R.D. and Nies, A.S. "Interrelationship between Prostaglandins and Renin Release" Kidney Int. 19(1981) : 816-821.
- Guyton, A.C. The Adrenocortical hormones in Textbook of Medical Physiology 6th ed. pp. 944-947, W.B. Saunders company, Tokyo, 1981.
- Hadler, W.A. and Brazil, O.V. "Pharmacology of Crystalline Crotoxin. IV Nephrotoxicity" Mem. Inst. Butantan. 33(1966) : 1001-1008.

- Hall, J.E., Guyton, A.G., Jackson, T.E., Coleman, T.G., Lohmeier, T.E. and Trippodo, N.C. "Control of glomerular filtration rate by Renin-Angiotensin System" Am. J. Physiol 233(5), (1977) : F 366-372.
- Hamilton, W.F., Riley, R.L., Attyah, A.m., Andre Cournand, D.M., Fawell, A., Himmelstein, R.P., Noble, J.W., Remington, D.W., Richard, Jr., Wheeler, N.C. and Witham, A.C. "Comparison of the Fick and Dye Injection Method of Measuring the Cardiac Output in Man" Am. J. Physiol. 153(1948) : 309-321.
- Harris, R.C., Hurst, P.E. and Saker, B.M. "Renal Failure After Snake Bite" Med. J. Aust. 2(1976) : 409-411.
- Henrich, W.L., Schrier, R.W. and Berl, T. "Mechanism of Renin Secretion During Hemorrhage in the Dog" J. Clin. Invest. 64 (1979) : 1-7.
- Henrich, W.L. "Role of Prostaglandin in Renin Secretion" Kidney Int. 19(1981) : 822-830.
- Hinshaw, L.B., Gilbert, R.P., Kuida, H. and Visscher, M.B. "Peripheral Resistance Change and Blood Pooling After Endotoxin in Eviscerated Dog" Am. J. Physiol. 195(3), (1958) : 631-634.
- Hsu, C.H. and Kurtz, T.W. "Renal Hemodynamic in Experimental ARF" Nephron 27(1981) : 204-208.
- Ishwariah, V. and David, J.C. "Pharmacological Action of the Venom of Russell's Viper" Indian J. Med. Res. 19(4). (1932) : 1035-1040.

- Iwanaga, S. and Suzuki, T. Enzymes in Snake Venom in Snake Venoms.
(Lee, C.Y. ed) pp. 61-158. Springer-Verlag Berlin Heidelberg,
New York, 1979,
- Kleinman, A., Page, R.C. and Preisler, P.W. "Effect of prothrombin
Clotting Time of the Concentrations of Calcium and other
Salts" J. Lab. Clin. Med. 30(1945) : 448.
- Knochel, J.P., White, M.G. and Dallas, "The Role of aldosterone in
Renal Physiology" Arch. Intern. Med. 131(1973) : 876-884.
- Kolmer, J.A., Spaulding, E.H. and Robinson, H.W. in Approved Laboratory
Technique. pp. 66-69, Atteton-Century Crofts, Inc. New
York, 1951.
- Lee, C.Y. "Toxicological Studies on the Venom of Vipera russellii
formosensis IV on the Cause of Death in Rabbits" Folia
Pharmacol. Jap. 40(1944) : 53-54.
- Lee, C.Y. "Toxicological Studies on the Venom of Vipera russellii
formosensis maki" J.F.M.A. 47(1948) : 65-98.
- Lee, C.Y., Johnson, S.A. and Seegers, W.H. "Clotting of Blood with
Russell's Viper Venom" J. Mich. State Med. Soc. 54(1955) :
801-824.
- Levens, N.R., Peach, M.J. and Carey, R.M. "Role of the Intrarenal
Renin-Angiotensin System in the Control of Renal Function"
Circ Res. 48(2), (1981) : 157-167.
- Mandal, A.K., Haygood, C.C., Bell, R.D., Sethney, T., James, T.M.,
Nordquist, J.A., Yunice, A.A. and Lindeman, R.D. "Effects of
Acute and Chronic Splenectomy on Experimental Acute Renal
Tubular Lesions" J. Lab. Clin. Med. 92(5), (1978) : 698-711.

- Mandal, A.K. "The Spleen and Acute Renal Failure : Mechanisms of Renal Protection by Splenectomy. Involvement of Prostaglandins" Prostaglandins Leukotrienes Med. 9(1982) : 85-107.
- Nashat, F.S. and Portal, R.W., "The Effects of Changes in Hematocrit on Renal Function" J. Physiol 193(1967) : 513-522.
- Oram, S., Ross, G., Pell, L. and Winteler, J. "Renal Cortical Calcification After Snake Bite" Br. Med. J. 1(1963) : 1647-1648.
- Page, R.C., DeBeer, E.J. and Orr, M.L. "Prothrombin Studies Using Russell's Viper Venom. III Effect of Lecithinized Venom on Prothrombin Clotting Time" J. Lab. Clin. Med. 27(1942) : 830.
- Parratt, J.R. and Sturgess, R.M. "The Effect of Indomethacin on the Cardiovascular and Metabolic Responses to E. coli Endotoxin in the Cat" Br.J. Pharmac. 50(1974) : 177-183.
- Ploth, D.W. and Navar, L.G. "Intrarenal effects of the Renin-Angiotensin system" Fed. Proc. 38(1979) : 2280-2285.
- Raab, W. and Kaiser, E. "Nephrotoxic Action of Snake Venom" Mem. Inst. Butantan 33(1966) : 1017-1020.
- Reid, H.A., Chan, K.E. and Thean, P.C. "Plasma Coagulation Defect (Defibrination Syndrome) in Malayan Viper Bite" Lancet 1(1963) : 621-626.
- Ruddy, S., Gigli, I. and Austen, K.F. "The Complement System of Man (Fourth of Four Parts)" N. Engl. J. Med. 287(1972) : 642-646.

- Rumpf, K.W., Frenzel, S., Lowitz, H.D. and Scheler, F. "The Effect of Indomethacin on Plasma Renin Activity in Man Under Normal Condition and After Stimulation of the Renin-Angiotensin System" Prostaglandins 10(1975) : 641-648.
- Sant, S.M. and Purandare, N.M. "Autopsy of Cases of Snake Bite with Special Reference to Renal Lesion" J. Postgrad. 18(1972) : 181-188.
- Sarang, A., Patnaik, B.C., Das, G.C., Tripathy, N., Misra, G., Snain, A.K. and Das, G.K. "Renal Involvement in Viperine Snake bite" Indian J. Med. Res. 71(1980) : 918-923.
- Schreiner, G.E. and Maher, J.F. "Toxic Nephropathy" Am J. Med. 38 (1965) : 409.
- Seymour, A.A. and ZeHr, J.E. "Influence of Renal Prostaglandin Synthesis on Renin Control Mechanism in the Dog" Circ Res. 45(1979) : 13-25.
- Shastry, J.C., Date, A., Carman, R.H. and Johny, K.V. "Renal Failure Following Snake Bite" Am. J. Trop. Med. 26(3), (1977) : 1032-2038.
- Shoukas, A.A., MacAnespie, C.L., Brunner, M.J. and Watermeier, L. "The Importance of the Spleen in Blood Volume Shifts of the Systemic Vascular Bed Caused by the Carotid Sinus Baroreceptor Reflex in the Dog" Circ Res. 49(1981) : 759-767.
- Sitpriya, V. and Boonpucknavig, V. "Further Observation of Renal Insufficiency in Snake Bite" Nephron 13(1974) : 396-403.
- Sitpriya, V. and Boonpucknavig, V. "The Kidney in Tropical Snakebite" Clin. Nephrology 8(3), (1977) : 377-383.

- Sitprija, V. and Boonpucknavig, V. Snake Venoms and Nephrotoxicity,
in Snake Venom (Lee, C.Y. ed) pp. 997-1018, SpringerVerlag
Berlin Heidelberg, New York, 1979.
- Sjodin, J.G., Haggmark, S. and Reiz, S. "Effect of Indomethacin on
Central, Renal and Coronary Hemodynamic" Scand, J. Urol.
Nephrol. 17(1983) : 73-79.
- Smith, H.W. in Principle of Renal Physiology, pp. 196-217, Oxford
University press, Inc, 1962.
- Starling, E.H. and Lavatt, E.C. in Principles of Human Physiology,
pp. 210, 13th Churchill London, 1962.
- Trisnananda, M. "Incidence, Clinical Manifestation and General Manage-
ment of Snake Bite" South Asian J. Trop. Med. Pub. HLH 10(2),
(1979) : 248-254.
- Tunghanathanich, P. "Effects of Russell's Viper Venom on Renal func-
tions in Dogs" Master's Thesis, Department of Inter-Depart-
ment of Physiology, Graduate School, Chulalongkorn University,
1983.
- Varaguman, T. and Panabokke, R.G. "Bilateral Cortical Necrosis of
the Kidney Following Snakebite" Postgrad Med. J. 46(1970) :
449-451.
- Vick, J.A., Ciucuta, H.P. and Menthei, J.H. "Pathophysiological
Studies of Ten Snake Venoms in Animal Toxin. (Russell, F.F.
and Saunders, P.R. eds) pp. 269-282, Oxford Pergamon, 1967.

Whitaker, A.N., McKay, D.G. and Csavossy, I. "Studies on Catecholamine Shock I. Disseminated Intravascular coagulation" Am. J. Path. 56(1969) : 153-176.

Young, D.B., MacCAA, R.E., Pan Yi-JEN and Guyton, A.C. "Effectiveness of the aldosterone, sodium and Potassium Feedback Control System" Am. J. Physiol. 231(3), (1976) : 945-953.

Table 1 The effects of intravenous injection of 0.1 mg/kg.bw. of Russell's viper venom on cardiovascular and renal parameter of dogs group 1, No 1, weighing 14.6 kg.

parameter	control	Post venom injection		
		1 hr	2 hrs	3 hrs
MAP (mm.Hg.)	143.3	93.3	121.1	130
HR (beat/min)	197	160	164	176
CO (ml/min/kg.bw.)	78.90	-	54.01	77.26
PV (ml/kg.bw.)	39.66	-	30.41	35.96
BV (ml/kg.bw.)	68.36	-	62.12	73.42
PCV (%)	42	51	51	51
TPR (dyne-sec/cm ⁵)	9,948	-	12,326	9217.
RVR (dyne-sec/cm ⁵)	34,298	181,295	207,279	277,782
V (μl/min/kg.bw.)	8.9	5.07	6.64	5.07
RPF (ml/min/kg.bw.)	13.27	1.40	1.57	1.26
RBF (ml/min/kg.bw.)	22.89	2.82	3.21	2.56
GFR (ml/min/kg.bw.)	2.05	0.56	0.65	0.62
F.F (%)	15.45	40.19	41.28	49.02
R.F. (%)	29.01	-	5.95	3.32
P _{Na} (mEq/L)	149	147	147	147
P _K (mEq/L)	3.4	2.4	2.7	3.0
P _{Cl} (mEq/L)	119	120	117	117
U _{Na} V (μEq/min/kg.bw.)	0.373	0.37	0.266	0.177
U _K V (μEq/min/kg.bw.)	1.3	0.405	0.551	0.390
U _{Cl} V (μEq/min/kg.bw.)	0.276	0.035	0.027	0.020
F.E. of Na (%)	0.122	0.449	0.278	0.196
F.E. of K (%)	18.65	30.12	31.42	21.13
F.E of Cl (%)	0.113	0.053	0.035	0.028
P _{Osm} (mOsm/Kg.)	294	297.2	298	301.4
U _{Osm} (mOsm/Kg.)	959.2	635.6	493	514.1
U _{Osm} V (μOsm/min/kg.bw.)	8.54	3.22	3.27	2.61
C _{Osm} (μOsm/min/kg.bw.)	29.04	10.84	10.98	8.65
C _{H₂O} (μOsm/min/kg.bw.)	- 20.14	- 5.77	- 4.34	- 3.58

Table 2 The effects of intravenous injection of 0.1 mg/kg.bw. of Russell's viper venom on cardiovascular and renal parameter of dogs group I No 2 weighing 11.5 kgs.

parameter	control	Post venom injection		
		1 hr	2 hrs	3 hrs
MAP (mm.Hg.)	136.6	88.3	58.3	78.3
HR (beat/min)	170	180	155	174
CO (ml/min/kg.bw.)	88.52	-	38.09	38.0
PV (ml/kg.bw.)	42.43	-	41.13	51.83
BV (ml/kg.bw.)	59.74	-	77.65	160
PCV (%)	29	48	47	45
TPR (dyne-sec/cm ⁵)	10,732	-	16,123	14,330
RVR (dyne-sec/cm ⁵)	49,525	429,837	506,279	2,182,032
V (μL/min/kg.bw.)	22.61	2.43	2.87	1.13
RPF (ml/min/kg.bw.)	13.63	0.74	0.42	0.14
RBF (ml/min/kg.bw.)	19.18	1.43	0.80	0.25
GFR (ml/min/kg.bw.)	5.27	0.35	0.24	0.08
F.F. (%)	38.70	46.96	57.17	58.22
R.F. (%)	21.67	-	2.10	0.66
P _{Na} (mEq/L.)	140	137	135	143
P _K (mEq/L)	3.5	3.0	2.7	3.2
P _{Cl} (mEq/L)	121	120	116	117
U _{Na} V (μEq/min/kg.bw.)	7.03	0.022	0.017	0.007
U _K V (μEq/min/kg.bw.)	1.42	0.214	0.201	0.071
U _{Cl} V (μEq/min/kg.bw.)	5.25	0.01	0.01	0.006
F.E. of Na (%)	0.952	0.046	0.053	0.059
F.E. of K (%)	7.72	20.45	30.67	27.82
F.E. of Cl (%)	0.822	0.023	0.041	0.06
P _{Osm} (mOsm/Kg.)	289	294.6	276.4	287.2
U _{Osm} (mOsm/Kg.)	1055.7	418.2	369	337.8
U _{Osm} V (μOsm/min/kg.bw.)	23.87	1.02	1.06	0.39
C _{Osm} (μOsm/min/kg.bw.)	82.59	3.45	3.83	1.33
C _{H₂O} (μOsm/min/kg.bw.)	- 59.98	- 1.02	- 0.96	- 0.2

Table 3 The effects of intravenous injection of 0.1 mg/kg.bw. of Russell's viper venom on cardiovascular and renal parameter of dogs group I No 3 weighing 12.1 kgs.

parameter	control	Post venom injection		
		1 hr	2 hrs	3 hrs
MAP (mm.Hg.)	120	81.67	85	110.67
HR (beat/min)	110	86	73	67
CO (ml/min/kg.bw.)	151.65	-	83.55	65.37
PV (ml/kg.bw.)	38.26	-	28.18	28.93
BV (ml/kg.bw.)	58.84	-	61.24	54.38
PCV (%)	35	54	54	46
TPR (dyne-sec/cm ⁵)	5,230	-	6,724	11,190
RVR (dyne-sec/cm ⁵)	34,354	37,458	59,854	181,084
V (μL/min/kg.bw.)	35.54	8.1	9.67	5.79
RPF (ml/min/kg.bw.)	15.01	6.63	4.32	2.18
RBF (ml/min/kg.bw.)	23.09	14.41	9.39	4.04
GFR (ml/min/kg.bw.)	3.01	1.23	2.19	1.03
FF (%)	20.06	18.56	50.62	47.31
RF (%)	15.22	-	11.23	6.18
P _{Na} (mEq/L.)	149	139	149	141
P _K (mEq/L.)	3.5	3.0	3.2	3.3
P _{Cl} (mEq/L.)	114	112	114	120
U _{Na} V (μEq/min/kg.bw.)	10.55	0.93	1.09	.492
U _K V (μEq/min/kg.bw.)	2.84	0.94	1.61	1.18
U _{Cl} V (μEq/min/kg.bw.)	8.07	0.58	0.198	0.13
F.E. of Na (%)	2.35	0.545	0.335	0.338
F.E. of K (%)	26.99	25.4	23.08	34.65
F.E. of Cl (%)	2.35	0.423	0.078	0.107
P _{Osm} (mOsm/Kg.)	279.2	285.4	282.4	280.6
U _{Osm} (mOsm/Kg.)	943.1	710.4	859.3	988.6
U _{Osm} V (μOsm/min/kg.bw.)	33.52	5.75	8.31	5.72
C _{Osm} (μOsm/min/kg.bw.)	120.04	20.16	29.42	20.40
C _{H₂O} (μOsm/min/kg.bw.)	- 84.5	- 12.06	- 19.75	- 14.61

Table 4 The effects of intravenous injection of 0.1 mg/kg.bw. of Russell's viper venom on cardiovascular and renal parameter of dogs group I No 4, weighing 10.0 kgs.

parameter	control	Post venom injection		
		1 hr	2 hrs	3 hrs
MAP (mm.Hg.)	135.0	53.33	86.67	100.0
HR (beat/min)	162	106	147	130
CO (ml/min/kg.bw.)	124.9	-	77.3	67.0
PV (ml/kg.bw.)	43.2	-	56.0	42.8
BV (ml/kg.bw.)	66.5	-	93.3	70.2
PCV (%)	35	35	40	39
TPR (dyne-sec/cm ⁵)	8,644	-	8,967	11,937
RVR (syne-sec/cm ⁵)	65,969	56,780	80,932	70,785
V (μL/min/kg.bw.)	77	42	153	146
RPF (ml/min/kg.bw.)	10.63	4.88	5.14	7.14
RBF (ml/min/kg.bw.)	16.37	7.51	8.57	11.30
GFR (ml/min/kg.bw.)	4.52	1.85	2.18	3.45
FF (%)	42.46	37.89	42.32	48.49
RF (%)	13.10	-	11.08	16.86
P _{Na} (mEq/L.)	145	151	141	148
P _K (mEq/L.)	2.8	2.9	2.3	2.8
P _{Cl} (mEq/L.)	117	117	123	113
U _{Na} V (μEq/min/kg.bw.)	11.17	1.22	4.28	3.36
U _K V (μEq/min/kg.bw.)	1.39	1.39	0.92	0.44
U _{Cl} V (μEq/min/kg.bw.)	11.47	0.76	2.75	1.31
F.E. of Na (%)	1.71	0.44	1.40	0.66
F.E. of K (%)	10.96	25.83	18.35	4.52
F.E. of Cl (%)	2.17	0.35	1.03	0.34
P _{Osm} (mOsm/Kg.)	290	301.8	288.8	302
U _{Osm} (mOsm/Kg.)	455.9	275.4	157	123.1
U _{Osm} V (μOsm/min/kg.bw.)	35.10	11.57	24.02	17.97
C _{Osm} (μOsm/min/kg.bw.)	121.05	38.33	83.11	59.51
C _{H₂O} (μOsm/min/kg.bw.)	- 44.05	+ 3.67	+ 69.82	+ 86.49

Table 5 The effects of intravenous injection of 0.1 mg/kg.bw. of Russell's viper venom on cardiovascular and renal parameter of dogs group I, No 5 weighing, 12.5 kgs.

parameter	control	Post venom injection		
		1 hr	2 hrs	3 hrs
MAP (mm.Hg.)	110	83.33	98.33	113.33
HR (beat/min)	172	138	144	150
CO (ml/min/kg.bw.)	408.48	-	272.0	136.56
PV (ml/kg.bw.)	48.32	-	44.32	37.84
BV (ml/kg.bw.)	68.08	-	59.12	50.48
PCV (%)	29	28	25	25
TPR (dyne-sec/cm ⁵)	1,723	-	2,313	5,309
RVR (dyne-sec/cm ⁵)	48,156	44,393	63,137	88,456
V (μL/min.kg.bw.)	44.8	67.2	32.0	24.0
RPF (ml/min/kg.bw.)	10.38	8.65	7.47	6.15
RBF (ml/min/kg.bw.)	14.62	12.01	9.96	8.20
GFR (ml/min/kg.bw.)	2.92	2.67	2.81	3.47
FF (%)	28.12	30.93	37.58	56.49
RF (%)	3.58	-	3.66	6.00
P _{Na} (mEq/L.)	146	141	142	146
P _K (mEq/L.)	2.9	2.6	2.9	3.4
P _{Cl} (mEq/L.)	109	110	98	112
U _{Na} V (μEq/min/kg.bw.)	10.62	11.76	7.04	5.52
U _K V (μEq/min/kg.bw.)	0.90	1.28	1.09	2.04
U _{Cl} V (μEq/min/kg.bw.)	9.96	7.32	3.55	2.4
F.E. fo Na (%)	2.49	3.12	1.77	1.09
F.E. of K (%)	10.60	18.36	13.36	17.28
F.E. of Cl (%)	3.13	2.49	1.29	0.61
P _{Osm} (mOsm/Kg.)	284.2	285	284.8	263.8
U _{Osm} (mOsm/ Kg.)	653.5	446.6	615.2	786
U _{Osm} V (μOsm/minkg.bw.)	29.28	30.01	19.69	18.86
C _{Osm} (μOsm/min/kg.bw.)	103.01	105.31	69.12	71.51
C _{H₂O} (μOsm/min/kg.bw.)	- 58.21	- 38.1	- 37.12	- 47.51

Table 6 The effects of intravenous injection of 0.1 mg/kg.bw. of Russell's viper venom on cardiovascular and renal parameter of dogs group II No 1, weighing 12.0 kgs.

parameter	control	Post venom injection		
		1 hr	2 hrs	3 hrs
MAP (mm.Hg.)	95.0	85.0	98.5	68.3
HR (beat/min)	161	157	172	134
CO (ml/min/kg.bw.)	123.5	-	75.58	61.67
PV (ml/kg.bw.)	50.92	-	56.42	36.08
BV (ml/kg.bw.)	70.67	-	71.33	44.0
PCV (%)	22	21	21	18
TPR (dyne-sec/cm ⁵)	5,126	-	8,668	7,382
RVR (dyne-sec/cm ⁵)	47,643	77,553	77,665	61,879
V (μL/min/kg.bw.)	16.67	8.5	8.75	7.92
RPF (ml/min/kg.bw.)	6.93	5.77	6.66	6.03
RBF (ml/min/kg.bw.)	9.63	7.31	8.44	7.36
GFR (ml/min/kg.bw.)	2.07	1.25	1.87	2.00
F.F (%)	29.86	22.09	28.09	33.20
R.F. (%)	7.79	-	11.16	11.93
P _{Na} (mEq/L.)	137	143	143	129
P _K (mEq/L.)	4.0	3.1	3.4	3.1
P _{Cl} (mEq/L.)	125	118	125	119
U _{Na} V (μEq/min/kg.bw.)	3.60	1.22	1.04	1.14
U _K V (μEq/min/kg.bw.)	1.92	1.28	1.6	1.73
U _{Cl} V (μEq/min/kg.bw.)	2.42	0.32	0.53	0.43
F.E. of Na (%)	1.27	0.67	0.39	0.44
F.E. of K (%)	23.15	32.47	25.16	27.8
F.E. of Cl (%)	0.93	0.21	0.23	0.18
P _{Osm} (mOsm/Kg.)	276	274	273.2	271
U _{Osm} (mOsm/Kg.)	1191.7	1343.4	1315.8	1350.2
U _{Osm} V (μOsm/min/kg.bw.)	19.87	11.42	11.52	10.69
C _{Osm} (μOsm/min/kg.bw.)	71.98	41.67	42.14	39.46
C _{H₂O} (μOsm/min/kg.bw.)	- 55.31	- 33.17	- 33.39	31.54

Table 7 The effects of intravenous injection of 0.1 mg/kg.bw. of Russell's viper venom on cardiovascular and renal parameter of dogs group II No 2 weighing 13.0 kgs.

parameter	control	Post venom injection		
		1 hr	2 hrs	3 hrs
MAP (mm.Hg.)	126.6	73.3	98.3	108.3
HR (beat/min)	228	190	184	194
CO (ml/min/kg.bw.)	133.23	-	44.46	48.23
PV (ml/kg.bw.)	35.77	-	25.69	23.15
BV (ml/kg.bw.)	55.08	-	40.15	36.23
PCV (%)	35	36	36	36
TPR (dyne-sec/cm ⁵)	5,846	-	13,602	13,814
RVR (syne-sec/cm ⁵)	45,956	41,899	63,609	110,187
V (μL/min/kg.bw.)	95.38	24.62	83.08	61.54
RPF (ml/min/kg.bw.)	11.02	6.89	6.07	3.87
RBF (ml/min/kg.bw.)	16.95	10.76	9.51	6.05
GFR (ml/min/kg/bw.)	2.94	2.79	3.08	2.16
FF (%)	26.65	40.52	50.68	55.73
RF (%)	12.72	-	21.38	12.53
P _{Na} (mEq/L.)	127	138	143	141
P _K (mEq/L.)	3.2	2.8	3.0	3.5
P _{Cl} (mEq/L.)	115	115	120	117
U _{Na} V (μEq/min/kg.bw.)	2.29	1.31	2.24	2.46
U _K V (μEq/min/kg.bw.)	2.10	1.60	1.41	1.42
U _{Cl} V (μEq/min/kg.bw.)	1.53	0.54	1.08	0.49
F.E. of Na (%)	0.61	0.34	0.51	0.81
F.E. of K (%)	22.33	20.47	15.29	18.75
F.E. of Cl (%)	0.45	0.17	0.29	0.20
P _{Osm} (mOsm/Kg.)	278.2	259.2	277.2	273.4
U _{Osm} (mOsm/Kg.)	172.5	386.8	117.8	156.6
U _{Osm} V (μOsm/min/kg.bw.)	16.45	9.52	9.79	9.64
C _{Osm} (μOsm/min/kg.bw.)	59.14	36.74	35.31	35.25
C _{H₂O} (μOsm/min/kg.bw.)	+ 36.24	- 12.12	+ 47.77	+ 26.29

Table 8 The effects of intravenous injection of 0.1 mg/kg.bw. of Russell's viper venom on cardiovascular and renal parameter of dogs group II No 3 weighing 13.5 kgs.

parameter	control	Post venom injection		
		1 hr	2 hrs	3 hrs
MAP (mm.Hg.)	100.0	83.3	98.3	113.3
HR (beat/min)	123	133	125	130
CO (ml/min/kg.bw.)	82.81	-	52.96	35.85
PV (ml/kg.bw.)	41.48	-	36.74	34.96
BV (ml/kg.bw.)	54.59	-	46.44	43.63
PCV (%)	24	24	21	20
TPR(dyne-sec/cm ⁵)	7,154	-	10,996	18,723
RVR (dyne-sec/cm ⁵)	20,450	59,137	111,740	152,017
V (μL/min/kg.bw.)	48.15	16.30	11.85	14.07
RPF (ml/min/kg.bw.)	20.28	6.34	4.12	3.53
RBF (ml/min/kg.bw.)	28.96	8.35	5.21	4.42
GFR (ml/min/kg.bw.)	4.54	1.49	1.17	1.36
F.F. (%)	22.40	23.53	28.41	38.62
RF (%)	34.98	-	9.84	12.32
P _{Na} (mEq/L.)	133	150	118	130
P _K (mEq/L.)	3.4	3.1	2.7	3.1
P _{Cl} (mEq/L.)	123	115	121	122
U _{Na} V (μEq/min/kg.bw.)	6.6	0.23	0.13	0.34
U _K V (μEq/min/kg.bw.)	3.42	1.52	1.15	1.52
U _{Cl} V (μEq/min/kg.bw.)	6.16	0.16	0.95	0.10
F.E. of Na (%)	1.09	0.10	0.09	0.19
F.E. of K (%)	22.14	32.75	36.40	35.94
F.E. of Cl (%)	1.10	0.10	0.07	0.06
P _{Osm} (mOsm/Kg.)	262.6	276.2	276.2	282.4
U _{Osm} (mOsm/Kg.)	579.4	407.8	432	441.4
U _{Osm} V (μOsm/min/kg.bw.)	27.90	6.65	5.12	6.21
C _{Osm} (μOsm/min/kg.bw.)	106.24	24.07	18.53	21.99
C _{H₂O} (μOsm/min/kg.bw.)	- 58.09	- 7.77	- 6.68	- 7.97

Table 9 The effects of intravenous injection of 0.1 mg/kg.bw. of Russell's viper venom on cardiovascular and renal parameter of dogs group II No 4 weighing 14.0 kgs.

parameter	control	Post venom injection		
		1 hr	2 hrs	3 hrs
MAP (mm.Hg.)	123.3	95	108.3	115
HR (beat/min)	170	144	138	138
CO (ml/min/kg.bw.)	179.29	-	134.29	223.57
PV (ml/kg.bw.)	42.09	-	43.21	79.36
BV (ml/kg.bw.)	56.07	-	56.86	104.43
PCV (%)	24	24	24	24
TPR (dyne-sec/cm ⁵)	3,929	-	4,607	2,939
RVR (dyne-sec/cm ⁵)	57,298	40,898	75,478	99,327
V (μL/min/kg.bw.)	25.0	134.29	78.57	40.0
RPF (ml/min/kg.bw.)	9.22	10.09	6.23	5.03
RBF (ml/min/kg.bw.)	12.29	13.27	8.14	6.61
GFR (ml/min/kg.bw.)	3.50	3.63	2.66	2.23
FF (%)	37.98	35.98	42.74	44.36
RF (%)	6.86	-	6.10	2.96
P _{Na} (mEq/L.)	141	145	162	133
P _K (mEq/L.)	3.0	2.0	2.4	2.4
P _{Cl} (mEq/L.)	121	116	120	118
U _{Na} V (μEq/min/kg.bw.)	1.98	2.43	1.26	1.28
U _K V (μEq/min/kg.bw.)	2.03	2.55	0.63	1.36
U _{Cl} V (μEq/min/kg.bw.)	1.88	0.67	0.86	0.44
F.E. of Na (%)	0.40	0.50	0.29	0.43
F.E. of K (%)	19.28	35.16	9.84	25.41
F.E. of Cl (%)	0.44	0.16	0.27	0.17
P _{Osm} (mOsm/Kg.)	276.8	291	272	290.4
U _{Osm} (mOsm/Kg.)	723.8	131.6	107	272.6
U _{Osm} V (μOsm/min/kg.bw.)	18.09	17.67	8.41	10.9
C _{Osm} (μOsm/min/kg.bw.)	65.37	60.73	30.91	37.55
C _{H₂O} (μOsm/min/kg.bw.)	- 40.37	+ 73.56	+ 47.66	+ 2.45

Table 10 The effects of intravenous injection of 0.1 mg/kg.bw. of Russell's viper venom on cardiovascular and renal parameter of dogs group II No 5 weighing 9.5 kgs.

parameter	control	Post venom injection		
		1 hr	2 hrs	3 hrs
MAP (mm.Hg.)	123.3	116.67	111.3.3	96.67
HR (beat/min)	210	234	234	222
CO (ml/min/kg.bw.)	177.89	-	186.11	-
PV (ml/kg.bw.)	62.21	-	50.53	50.74
BV (ml/kg.bw.)	81.89	-	64.84	65.05
PCV (%)	24	24	22	22
TPR (dyne-sec/cm ⁵)	5,835	-	5,125	-
RVR (dyne-sec/cm ⁵)	45,904	48,166	61,640	58.273
V (μL/min/kg.bw.)	12.63	11.58	9.47	8.74
RPF (ml/min/kg.bw.)	17.19	15.30	12.07	10.89
RBF (ml/min/kg.bw.)	22.61	20.39	15.47	13.97
GFR (ml/min/kg.bw.)	3.60	3.19	2.79	2.38
F.F (%)	20.97	20.88	23.09	21.89
R.F. (%)	12.71	-	8.32	-
P _{Na} (mEq/L.)	140	124	116	129
P _K (mEq/L.)	4.0	2.7	2.5	2.7
P _{Cl} (mEq/L.)	118	124	123	130
U _{Na} V (μEq/min/kg.bw.)	0.62	0.82	0.82	0.72
U _K V (μEq/min/kg.bw.)	2.88	2.39	1.88	1.99
U _{Cl} V (μEq/min/kg.bw.)	1.10	0.38	0.33	2.62
F.E. of Na (%)	0.12	0.21	0.25	0.23
F.E. of K (%)	19.98	27.65	26.92	30.94
F.E. of Cl (%)	0.26	0.10	0.10	0.09
P _{Osm} (mOsm/Kg.)	246.6	288.2	288.2	282
U _{Osm} (mOsm/Kg.)	1808	1439.6	1429	1298
U _{Osm} V (μOsm/min/kg.bw.)	22.84	16.67	13.53	11.34
C _{Osm} (μOsm/min/kg.bw.)	92.6	57.83	46.96	40.21
C _{H₂O} (μOsm/min/kg.bw.)	- 79.97	- 46.25	- 37.49	-31.47

Table 11 The effects of intravenous injection of 0.1 mg/kg.bw. of Russell's viper venom on cardiovascular and renal parameter of dogs group III No 1 weighing 11.0 kgs.

parameter	control	Post venom injection		
		1 hr	2 hrs	3 hrs
MAP (mm.Hg.)	135	108.33	113.33	121.67
HR (beat/min)	196	180	216	210
CO (ml/min/kg.bw.)	291.82	-	183.64	149.09
PV (ml/kg.bw.)	62.91	-	38.18	40.35
BV (ml/kg.bw.)	85.0	-	51.64	54.82
PCV (%)	26	26	26	26
TPR (dyne-sec/cm ⁵)	3,664	-	4,487	5,934
RVR (dyne-sec/cm ⁵)	112,824	100,770	110,781	91,631
V (μL/min/kg.bw.)	8.18	11.82	9.09	12.73
RPF (ml/min/kg.bw.)	6.44	5.78	5.50	7.14
RBF (ml/min/kg.bw.)	8.70	7.82	7.44	9.65
GFR (ml/min/kg.bw.)	2.80	2.90	2.72	2.85
F.E. (%)	43.48	50.10	49.45	53.91
R.F. (%)	2.98	-	4.05	6.48
P _{Na} (mEq/L.)	137	124	143	126
P _K (mEq/L.)	3.4	2.9	3.1	3.1
P _{Cl} (mEq/L.)	125	112	122	110
U _{Na} V (μEq/min/kg.bw.)	0.87	1.83	2.01	3.27
U _K V (μEq/min/kg.bw.)	2.17	2.33	2.87	3.30
C _{Cl} V (μEq/min/kg.bw.)	0.16	0.36	0.25	0.27
F.E. of Na (%)	0.23	0.51	0.52	0.67
F.E. of K (%)	22.78	27.70	34.05	27.93
F.E. of Cl (%)	0.04	0.11	0.07	0.06
P _{Osm} (mOsm/ Kg.)	285	275.2	270	272.6
U _{Osm} (mOsm/ Kg.)	1913	1686.7	1959.4	1929
U _{Osm} V (μOsm/min/kg.bw.)	15.65	19.94	17.81	24.56
C _{Osm} (μOsm/min/kg.bw.)	54.91	72.44	65.97	90.08
C _{H₂O} (μOsm/min/kg.bw.)	- 46.73	- 60.62	- 56.88	- 77.35

Table 12 The effects of intravenous injection of 0.1 mg/kg.bw. of Russell's viper venom on cardiovascular and renal parameter of dogs group III No 2 weighing 15.0 kgs.

parameter	control	Post venom injection		
		1 hr	2 hrs	3 hrs
MAP (mm.Hg.)	103.33	128.33	128.33	121.67
HR (beat/min)	126	140	152	156
CO (ml/min/kg.bw.)	80.93	-	51.0	44.2
PV (ml/kg.bw.)	50.2	-	28.67	27.67
BV (ml/kg.bw.)	71.73	-	49.4	47.67
PCV (%)	30	42	42	42
TPR (dyne-sec/cm ⁵)	6,808	-	13,417	14,677
RVR (dyne-sec/cm ⁵)	64,339	91,445	78,662	108,449
V (μL/min/kg.bw.)	9.33	11.33	14.67	10.0
RPF (ml/min/kg.bw.)	5.99	4.34	5.05	3.47
RBF (ml/min/kg.bw.)	8.56	7.48	8.70	5.98
GFR (ml/min/kg.bw.)	2.95	2.69	2.67	1.88
FF (%)	49.24	61.87	52.99	54.23
R.F. (%)	10.58	-	14.67	13.53
P _{Na} (mEq/L.)	128	148	129	152
P _K (mEq/L.)	3.2	3.6	3.3	3.7
P _{Cl} (mEq/L.)	111	107	107	121
U _{Na} V (μEq/min/kg.bw.)	2.01	1.12	0.98	0.59
U _K V (μEq/min/kg.bw.)	2.05	1.68	1.80	1.54
U _{Cl} V (μEq/min/kg.bw.)	0.46	0.19	0.22	0.14
F.E. of Na (%)	0.53	0.28	0.28	0.21
F.E. of K (%)	21.74	17.35	20.45	22.12
F.E. of Cl (%)	0.14	0.07	0.08	0.06
P _{Osm} (mOsm/Kg.)	248.2	278.8	295	287.6
U _{Osm} (mOsm/Kg.)	2064	1729	1334.7	1196.6
U _{Osm} V (μOsm/min/kg.bw.)	19.26	19.59	19.58	11.97
C _{Osm} (μOsm/min/kg.bw.)	77.59	70.26	66.37	41.61
C _{H₂O} (μOsm/min/kg.bw.)	- 68.26	- 58.93	- 51.7	- 31.61

Table 13 The effects of intravenous injection of 0.1 mg/kg.bw. of Russell's viper venom on cardiovascular and renal parameter of dogs group III No 3 weighing 13.5 kgs.

parameter	control	Post venom injection		
		1 hr	2 hrs	3 hrs
MAP (mm.Hg.)	140	136.67	135.0	123.33
HR (beat/min)	186	162	156	186
CO (ml/min/kg.bw.)	154.07	-	89.41	105.19
PV (ml/kg.bw.)	65.63	-	55.63	55.33
BV (ml/kg.bw.)	91.11	-	75.11	73.78
PCV (%)	28	30	26	25
TPR (dyne-sec/cm ⁵)	5,383	-	8,946	6,946
RVR (dyne-sec/cm ⁵)	75,194	62,327	79,556	75,005
V (μL/min/kg.bw.)	8.15	7.78	9.26	10.0
RPF (ml/min/kg.bw.)	7.93	0.09	7.44	7.31
RBF (ml/min/kg.bw.)	11.03	12.99	10.05	9.74
GFR (ml/min/kg.bw.)	3.49	3.59	3.41	2.70
F.E. (%)	43.92	39.43	45.80	37.01
R.F. (%)	7.16	-	11.24	9.26
P _{Na} (mEq/L.)	133	127	125	144
P _K (mEq/L.)	2.7	2.7	2.7	3.4
P _{Cl} (mEq/L.)	115	124	108	120
U _{Na} V (μEq/min/kg.bw.)	1.58	0.48	1.09	1.18
U _K V (μEq/min/kg.bw.)	1.76	2.29	2.42	2.44
U _{Cl} V (μEq/min/kg.bw.)	0.42	0.19	0.18	0.15
F.E. of Na (%)	0.34	0.11	0.26	0.30
F.E. of K (%)	18.69	23.70	26.27	26.54
F.E. of Cl (%)	0.11	0.04	0.05	0.05
P _{Osm} (mOsm/Kg.)	299.2	275.4	282	300.8
U _{Osm} (mOsm/Kg.)	2087	1357.8	1458.2	1287.7
U _{Osm} V (μOsm/min/kg.bw.)	17.01	10.56	13.50	12.88
C _{Osm} (μOsm/min/kg.bw.)	56.85	38.35	47.88	42.81
C _{H₂O} (μOsm/min/kg.bw.)	- 48.7	- 30.57	- 38.62	- 32.81

Table 14 The effects of intravenous injection of 0.1 mg/kg.bw. of Russell's viper venom on cardiovascular and renal parameter of dogs group III No 4 weighing 14.0 kgs.

parameter	control	Post venom injection		
		1 hr	2 hrs	3 hrs
MAP (mm.Hg.)	136.67	128.33	138.33	136.67
HR (beat/min)	172	160	150	174
CO (ml/min/kg.bw.)	348.57	-	46.0	114.07
PV (ml/kg.bw.)	58.14	-	41.86	43.79
BV (ml/kg.bw.)	83.07	-	64.5	66.36
PCV (%)	30	39	35	34
TPR (dyne-sec/cm ⁵)	2,240	-	9,189	6,844
RVR (dyne-sec/cm ⁵)	83,620	88,344	79,772	86,355
V (μL/min/kg.bw.)	10.36	9.64	11.43	12.5
RPF (ml/min/kg.bw.)	6.54	5.06	6.44	5.79
RBF (ml/min/kg.bw.)	9.38	8.30	9.91	9.04
GFR (ml/min/kg.bw.)	3.08	2.65	3.00	3.06
FF (%)	47.15	52.25	46.63	51.32
RF (%)	2.68	-	11.52	7.93
P _{Na} (mEq/L.)	135	143	141	140
P _K (mEq/L.)	2.7	2.7	3.4	3.8
P _{Cl} (mEq/L.)	103	120	114	107
U _{Na} V (μEq/min/kg.bw.)	3.15	2.45	1.49	2.68
U _K V (μEq/min/kg.bw.)	0.94	1.52	1.38	1.85
U _{Cl} V (μEq/min/kg.bw.)	1.33	0.52	0.47	0.50
F.E. of Na (%)	0.76	0.65	0.35	0.62
F.E. of K (%)	11.33	21.33	13.54	15.90
F.E. of Cl (%)	0.42	0.16	0.14	0.15
P _{Osm} (mOsm/Kg.)	294.8	292.8	297.2	291.2
U _{Osm} (mOsm/Kg.)	1964	1438.5	1460.9	1479
U _{Osm} V (μOsm/min.kg.bw.)	20.35	13.87	16.70	18.49
C _{Osm} (μOsm/min/kg.bw.)	69.02	47.36	56.18	63.49
C _{H₂O} (μOsm/min/kg.bw.)	- 58.66	- 37.72	- 44.75	- 50.99

Table 15 The effects of intravenous injection of 0.1 mg/kg.bw. of Russell's viper venom on cardiovascular and renal parameter of dogs group III No 5 weighing 13.6 kgs.

parameter	control	Post venom injection		
		1 hr	2 hrs	3 hrs
MAP (mm.Hg.)	138.33	121.67	133.33	133.33
HR (beat/min)	144	150	156	162
CO (ml/min/kg.bw.)	128.68	-	65.29	53.75
PV ((ml/kg.bw.)	45.15	-	35.59	48.46
BV (ml/kg.bw.)	72.79	-	82.79	105.39
PCV (%)	38	63	57	54
TPR (dyne-sec/cm ⁵)	6,322	-	12,009	14,588
RVR (dyne-sec/cm ⁵)	54.402	83,774	117,184	165,715
V (μL/min/kg.bw.)	9.93	4.04	6.1	5.15
RPF (ml/min/kg.bw.)	8.64	3.16	2.88	2.18
RBF (ml/min/kg.bw.)	13.92	8.54	6.69	4.73
GFR (ml/min/kg.bw.)	3.28	1.65	1.40	0.97
FF (%)	37.99	52.19	48.73	44.76
RF (%)	10.83	-	10.25	8.80
P _{Na} (mEq/L.)	140	138	142	123
P _K (mEq/L.)	3.3	3.1	3.2	3.0
P _{Cl} (mEq/L.)	120	115	116	124
U _{Na} V (μEq/min/kg.bw.)	0.60	0.06	0.05	0.04
U _K V (μEq/min/kg.bw.)	1.61	0.95	0.89	0.67
U _{Cl} V (μEq/min/kg.bw.)	0.14	0.05	0.04	0.04
F.E. of Na (%)	0.01	0.03	0.03	0.03
F.E. of K (%)	14.85	18.51	19.72	22.89
F.E. of Cl (%)	0.04	0.03	0.03	0.03
P _{Osm} (mOsm/Kg.)	289.8	284.8	281.2	276.2
U _{Osm} (mOsm/Kg.)	1983.5	1608.6	1060.4	828.1
U _{Osm} V (μOsm/min/kg.bw.)	19.70	6.49	6.47	4.26
C _{Osm} (μOsm/min/kg.bw.)	67.69	22.82	23.00	15.44
C _{H₂O} (μOsm/min/kg.bw.)	- 55.03	- 18.78	- 16.9	- 10.29

Table 16 The effects of intravenous injection of 0.1 mg/kg.bw. of Russell's viper venom on cardiovascular and renal parameter of dogs group IV, No 1 weighing 13.0 kgs.

parameter	control	Post venom injection		
		1 hr	2 hrs	3 hrs
MAP (mm.Hg.)	145	161.67	165	170
HR (beat/min)	198	186	174	180
CO (ml/min/kg.bw.)	241.69	-	72.85	64.92
PV (ml/kg.bw.)	58.0	-	88.85	46.77
BV (ml/kg.bw.)	80.62	-	123.46	71.0
PCV (%)	28	28	28	28
TPR (dyne-sec/cm ⁵)	3,691	-	13,935	16,110
RVR (dyne-sec/cm ⁵)	72,718	86,145	111,224	192,341
V(μ L/min/kg.bw.)	11.92	14.62	10.38	5.15
RPF (ml/min/kg.bw.)	8.83	7.78	6.57	3.92
RBF (ml/min/kg.bw.)	12.26	11.15	9.13	5.44
GFR (ml/min/kg.bw.)	4.46	2.80	3.46	2.19
FF (%)	50.52	35.94	52.70	55.89
RF (%)	5.08	-	12.53	8.38
P _{Na} (mEq/L.)	136	134	142	142
P _K (mEq/L.)	2.6	3.1	3.5	3.5
P _{Cl} (mEq/L.)	108	119	113	107
U _{Na} V (μ Eq/min/kg.bw.)	4.76	3.52	2.09	0.90
U _K V (μ Eq/min/kg.bw.)	0.68	0.45	0.57	0.87
U _{Cl} V (μ Eq/min/kg.bw.)	4.29	1.59	0.56	0.16
F.E. of Na (%)	0.78	0.94	0.43	0.29
F.E. of K (%)	5.86	5.22	4.72	11.37
F.E. of Cl (%)	0.89	0.48	0.14	0.07
P _{Osm} (mOsm/Kg.)	293.8	291	294.2	291
U _{Osm} (mOsm/Kg.)	1798.4	948.9	1234.6	1416.1
U _{Osm} V (μ Osm/min/kg.bw.)	21.43	13.82	12.82	7.29
C _{Osm} (μ Osm/min/kg.bw.)	72.97	47.67	43.56	25.06
C _{H₂O} (μ Osm/min/kg.bw.)	- 61.04	- 33.05	- 33.18	- 19.91

Table 17 The effects of intravenous injection of 0.1 mg/kg.bw. of Russell's viper venom on cardiovascular and renal parameter of dogs group IV, No 2 weighing 11.5 kgs.

parameter	control	Post venom injection		
		1 hr	2 hrs	3 hrs
MAP (mm.Hg.)	125	116.67	90.00	88.33
HR (beat/min)	174	198	168	180
CO (ml/min/kg.bw.)	197.48	-	115.22	138.52
PV (ml/kg.bw.)	63.74	-	46.61	62.87
BV (ml/kg.bw.)	87.39	-	60.61	78.61
PCV (%)	27	25	23	20
TPR (dyne-sec/cm ⁵)	4,402	-	5,433	4,435
RVR (dyne-sec/cm ⁵)	69,981	90,975	69,287	74,177
V (μL/min/kg.bw.)	25.22	16.09	17.83	13.91
RPF (ml/min/kg.bw.)	9.07	6.69	6.97	6.63
RBF (ml/min/kg.bw.)	12.42	8.92	9.03	8.28
GFR (ml/min/kg.bw.)	3.33	2.47	2.95	2.44
FF (%)	36.67	36.96	42.43	36.83
RF (%)	6.29	-	7.84	5.97
P _{Na} (mEq/L.)	137	126	122	121
P _K (mEq/L.)	3.4	3.0	2.8	3.0
P _{Cl} (mEq/L.)	109	120	111	119
U _{Na} ^V (μEq/min/kg.bw.)	0.83	0.71	1.05	0.61
U _K ^V (μEq/min/kg.bw.)	2.22	2.08	2.09	2.35
U _{Cl} ^V (μEq/min/kg.bw.)	1.10	0.13	0.14	0.14
F.E. of Na (%)	0.18	0.23	0.29	0.21
F.E. of K (%)	19.63	27.99	25.24	32.12
F.E. of Cl (%)	0.03	0.04	0.04	0.05
P _{Osm} (mOsm/Kg.)	266.2	282.2	295.4	296
U _{Osm} (mOsm/Kg.)	1218.8	1166.4	1265.3	1234
U _{Osm} ^V (μOsm/min/kg.bw.)	30.74	18.77	22.69	17.16
C _{Osm} (μOsm/min/kg.bw.)	115.47	66.50	76.37	57.99
C _{H₂O} (μOsm/min/kg.bw.)	- 90.25	- 50.41	-58.54	- 44.08

Table 18 The effects of intravenous injection of 0.1 mg/kg.bw. of Russell's viper venom on cardiovascular and renal parameter of dogs group IV, No 3 weighing 12.8 kgs.

parameter	contol	Post venom injection		
		1 hr	2 hrs	3 hrs
MAP (mm.Hg.)	100.0	101.67	78.33	70.0
HR (beat/min)	168	200	186	198
CO (ml/min/kg.bw.)	370.39	-	-	139.92
PV (ml/kg.bw.)	59.45	-	54.77	44.14
BV (ml/kg.bw.)	79.22	-	70.23	55.16
PCV (%)	25	23	22	20
TPR (dyne-sec/cm ⁵)	1,687	-	-	3,126
RVR (dyne-sec/cm ⁵)	58,865	81,348	51,673	46,807
V (μL/min/kg.bw.)	17.19	12.11	15.23	12.5
RPF (ml/min/kg.bw.)	7.96	6.01	7.39	7.48
RBF (ml/min/kg.bw.)	10.61	7.81	9.47	9.34
GFR (ml/min/kg.bw.)	2.29	1.96	2.02	2.15
FF (%)	28.81	32.52	27.33	28.75
EF (%)	2.87	-	-	6.68
P _{Na} (mEq/L.)	144	144	144	143
P _K (mEq/L.)	2.9	2.5	2.8	3.4
P _{Cl} (mEq/L.)	98	93	99	96
U _{Na} V (μEq/min/kg.bw.)	0.96	1.05	1.31	0.89
U _K V (μEq/min/kg.bw.)	1.55	1.44	1.66	1.76
U _{Cl} V (μEq/min/kg.bw.)	0.17	0.25	0.29	0.26
F.E. of Na (%)	0.29	0.37	0.45	0.29
F.E. of K (%)	23.25	29.48	29.37	24.12
F.E. of Cl (%)	0.08	0.14	0.15	0.13
P _{Osm} (mOsm/Kg.)	302.2	309.6	307.4	305.4
U _{Osm} (mOsm/Kg.)	1185.4	1022.7	1158.1	1075.4
U _{Osm} V (μOsm/min/kg.bw.)	20.38	12.38	17.64	13.44
C _{Osm} (μOsm/min/kg.bw.)	67.43	40.0	57.38	44.02
C _{H₂O} (μOsm/min/kg.bw.)	- 50.24	- 27.89	- 42.15	- 31.52

Table 19 The effects of intravenous injection of 0.1 mg/kg.bw. of Russell's viper venom on cardiovascular and renal parameter of dogs group IV, No 4 weighing 12.0 kgs.

parameter	control	Post venom injection		
		1 hr	2 hrs	3 hrs
MAP (mm.Hg.)	100.0	88.33	115.0	115.0
HR (beat/min)	192	174	204	210
CO (ml/min/kg.bw.)	357.5	-	156.17	169.58
PV (ml/kg.bw.)	76.83	-	56.5	67.83
BV (ml/kg.bw.)	102.5	-	72.42	84.83
PCV (%)	25	22	22	20
TPR (dyne-sec/cm ⁵)	1,864	-	4,908	4,520
RVR (dyne-sec/cm ⁵)	45,679	41,952	56,759	50,412
V (μL/min/kg.bw.)	12.08	15.0	16.0	15.83
RPF (ml/min/kg.bw.)	10.94	10.95	10.53	12.16
RBF (ml/min/kg.bw.)	14.59	14.03	13.50	15.20
GFR (ml/min/kg.bw.)	4.68	4.17	4.55	4.48
FF (%)	42.79	38.09	43.24	36.86
RF (%)	4.08	-	8.65	8.97
P _{Na} (mEq/L.)	139	141	150	149
P _K (mEq/L.)	3.0	3.1	3.3	3.4
P _{Cl} (mEq/L.)	118	109	120	105
U _{Na} V (μEq/min/kg.bw.)	1.91	3.12	2.67	1.96
U _K V (μEq/min/kg.bw.)	1.96	2.43	2.17	1.95
U _{Cl} V (μEq/min/kg.bw.)	1.60	2.04	1.87	1.55
F.E. of Na (%)	0.29	0.53	0.39	0.29
F.E. of K (%)	13.93	18.76	14.42	12.78
F.E. of Cl (%)	0.29	0.45	0.34	0.33
P _{Osm} (mOsm/Kg.)	287.8	292.6	292.8	294
U _{Osm} (mOsm/Kg.)	1386	1360.7	1230.6	1031.8
U _{Osm} V (μOsm/min/kg.bw.)	16.74	20.41	19.69	16.33
C _{Osm} (μOsm/min/kg.bw.)	58.18	69.76	67.25	55.56
C _{H₂O} (μOsm/min/kg.bw.)	- 46.10	- 54.76	- 51.25	- 39.73

BIOGRAPHY

Miss Somchit Tongyongchai was born on May, 1, 1953 in Ubol - Ratchathanee and graduated with a B.Sc. in Nursing from Khon Kaen University in 1976. At present she is a instructor of Nursing in Sanpasitthiprasong Nursing collage, Ubol Ratchathanee.

