

Table IV shows the daily urinary excretion of Optical Density Units (ODU) of salt-soluble proteins and Tamm-Horsfall (T-H) mucoprotein in newborn and infants of Ubol villages and city. The salt-soluble protein excretions were significantly higher in samples from villages than those from city in the three age groups (3-15 days, 16-30 days, and 7-12 months).

The newborn and infants of all age groups from villages also excreted a consistently higher amount of T-H mucoproteins than those from the city. Marked decreases in the ratio of Salt Soluble Protein and T-H mucoprotein were also observed in village infants, over 15 day old. These findings demonstrated a strikingly higher excretion of the T-H mucoprotein. Boyce and Swanson⁽²⁾ also observed high salt-insoluble protein (T-H mucoprotein) excretion in the urine of patients with renal calculous disease. Therefore, our findings may be significant.

Table V demonstrates the percentages of various molecular weight groups of salt-soluble urinary proteins in village and Ubol city infants. Significantly higher excretion in the 5,000 to 10,000 and the 10,000 to 100,000 molecular weight fraction of salt-soluble urinary proteins was observed in the 1,000 to 5,000 molecular weight fraction was observed in the city infants. No difference is observed in the 100,000 molecular weight fraction.

Our results are comparable with those of Mia and Cornelius⁽³⁾ who demonstrated a significant daily increase in the 4,000 to 9,000 molecular weight fraction of salt-soluble urinary proteins in sheep receiving a "calculi-provoking" diet as compared to normal sheep.

In summary, the village infants excreted higher urinary TNDS, T-H mucoprotein and 5,000 to 10,000 MW fraction of salt-soluble proteins than the city subjects. The significance of these findings to stone formation requires further study.

REFERENCES

1. Gale, R.O., Cornelius, C.E., and Bishop, A.J.: Fractionation of urinary biocolloids in children and adults by Gel Filtration. To be published.
2. Boyce, W.H., and Swanson, M.: Biocolloids of urine in health and in calculous disease. II. Electrophoretic and biochemical studies of a mucoprotein insoluble in molar sodium chloride. *J. Clin. Invest.* 34:1581, 1955
3. Mia, A.S. and Cornelius, C.E.: Ruminant urolithiasis. VI. Fractionation of ovine urinary biocolloids by gel filtration. *Invest. Urol.* 1:439, 1964.

Table 1

Numbers and mean ages of subjects, and 24-hour urine volumes and pHs, 1965-1966

Age and Locality	No. of subj.	Mean age	Urine vol. ml.	Average pH
3-15 days				
Village	10	9	85 ± 22	6.0
Ubol City	12	9	142 ± 20	6.1
Bangkok	20	5	146 ± 18	6.6
16-30 days				
Village	14	22	236 ± 26	6.4
Ubol City	17	24	239 ± 27	6.0
Bangkok	3	21	304 ± 40	6.8
1-6 months				
Village	46	2.7	244 ± 17	6.4
Ubol City	38	2.7	261 ± 20	6.0
Bangkok	21	3.6	290 ± 25	6.9
7-12 months				
village	16	9.5	205 ± 16	6.6
Ubol City	17	9.5	242 ± 41	6.8
Bangkok	19	10.2	174 ± 19	6.4

Table II
Urinary Total Non dialyzable Solids (TNDS)* in Newborn and Infants

Ages	Villages		City	
	No. of subj.	TNDS mg/24 hrs	No. of subj.	TNDS mg/24 hrs
1-15 days	10	130.0±21.7**	12	57.8±9.6
16-30 days	14	120.5±20.1	17	86.6±7.9
1-6 months	46	114.0±8.5	38	110.2±9.6
7-12 months	16	146.6±14.1	17	152.3±27.7

* TNDS as Determine by Total Dry Weight.

** P= < 0.01 (Villages compare with City)

Table III
 Urinary Total Non-Dialyzable Solids (TNDS) by
 Dry Weight in Different Geographic Area

Area	Newborn		Infants	
	No. of subj.	TNDS (mg/24 hr)	No. of subj.	TNDS (mg/24 hr)
Ubol Villages (V)	24	124.46 ± 14.50	62	122.39 ± 7.47
Ubol City (C)	29	74.69 ± 6.56	55	176.00 ± 10.98
Bangkok (B)	23	61.64 ± 9.83	40	155.86 ± 14.13
U.S.A.*	7	89.9 ± 26.8	3	124.5
p V vs C		< 0.01		< 0.01
V vs B		< 0.01		0.05-0.02
C vs B		0.50-0.10		0.50-0.10

* Keutel and King: Clin. Chem. Acta II (1965)

FIGURE I
Percentage of various molecular weight groups of
salt-soluble urinary proteins in
male infants

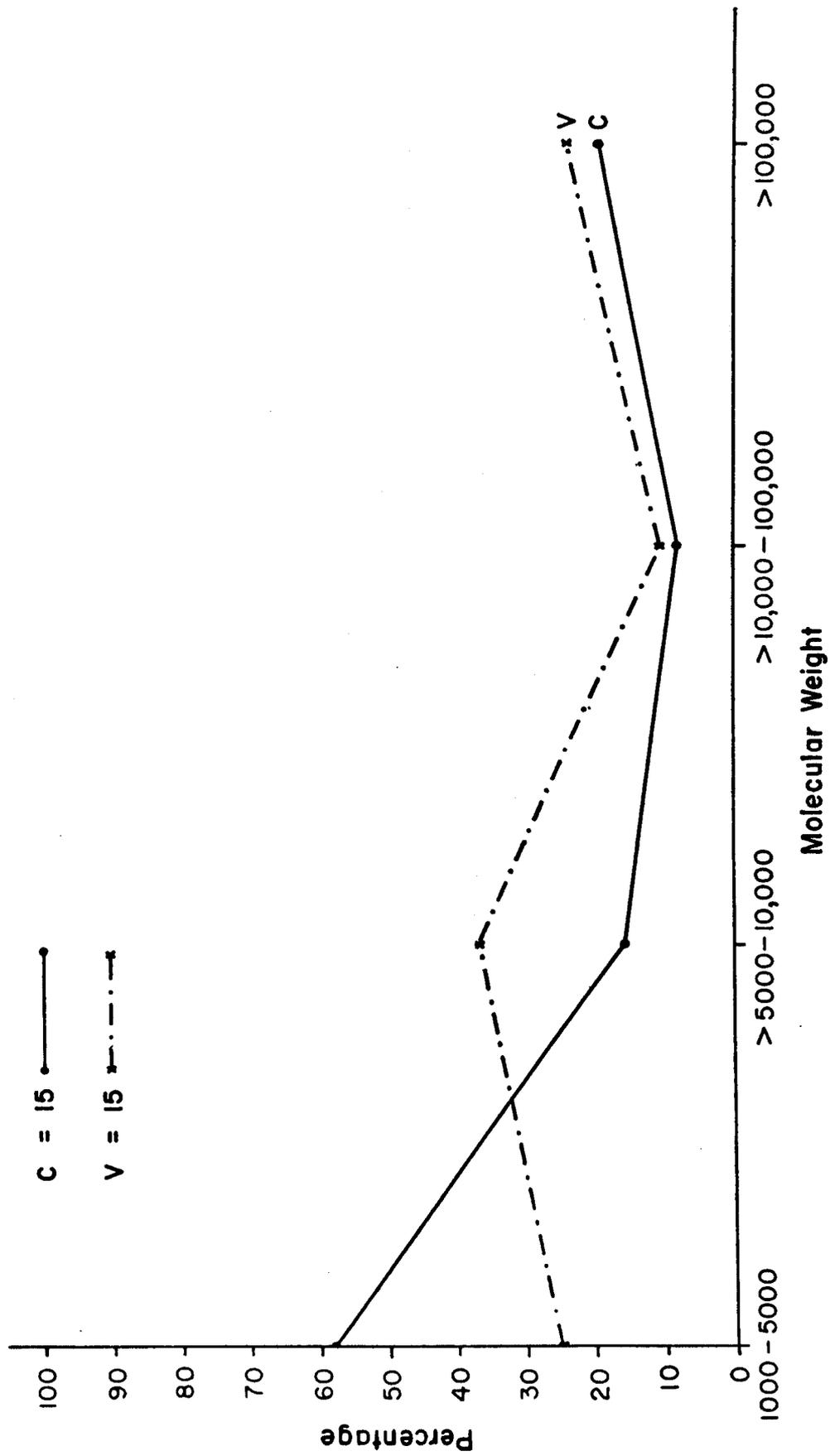


Table IV
Daily excretion of Optical Density Units (ODU) of salt soluble urinary protein*
and Tamm-Horsfall (T-H) mucoprotein** in male newborn and infants

Age	Salt Soluble Protein ODU/24 hrs		T-H Protein ODU/24 hrs		Ratio: $\frac{SSP}{T-H}$	
	Village	City	Village	City	Village	City
3-15 days	(2) 78.6±7.3 ^d	(8) 47.6±12.3	(2) 2.9±1.9	(8) 1.7±0.4	1:0.03	1:0.03
16-30 days	(8) 87.6±10.1 ^a	(13) 52.9±7.2	(8) 75.2±73.5	(13) 1.6±0.2	1:0.86	1:0.03
1-6 months	(30) 51.3±3.9	(26) 65.1±14.6	(30) 48.2±30.3	(26) 20.0±14.4	1:0.94	1:0.31
7-12 months	(5) 101.4±17.5 ^a	(6) 39.9±4.5	(5) 103.3±94.6	(6) 15.2±7.7	1:1.02	1:0.38

* Salt soluble proteins equal = RS₁
** (T-H) Mucoprotein equal = R¹

Probability value Village with City
p < 0.01 a
0.05 < p < 0.10 d

Table V
Percentage of various molecular weight groups of salt-soluble urinary proteins in
male infants from Ubol Villages and Ubol City

Area	Molecular Weight (MW) Groups-Percent of Total in 24 hrs Sample					
	Urine Samples Number	Mean Ages months	1,000-5,000 MW %	5,000-10,000 MW %	10,000-100,000 MW %	100,000 MW %
Villages	15	5.0	24.95±6.11 ^a	36.71±5.06 ^a	15.01±3.28 ^d	23.28±2.03
City	15	5.02	58.03±6.44	15.04±3.49	7.97±1.22	19.11±3.36

Probability Value Village with City
0.05 p < 0.01 a
 p < 0.10 d