

be carried out to characterize the nature of mucous substances in the follicular cysts.

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THROMBO AND LEUCOCYTIC STUDIES IN THE DOMESTIC FOWL NATURALLY INFECTED WITH *RAILLIETINA TETRAGONA* (CESTODA)

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THE present report concerns the changes in thrombocytic and leucocytic counts of the domestic fowl, *Gallus domesticus*, due to spontaneous infection with a gastro-intestinal cestode, *Railletina tetragona*. About 25 cockerels and 17 pullets belonging to the age group of 3–4 months were examined. Among these, the uninfected (healthy) birds—8 cockerels and 7 pullets—were taken as controls for comparison. Total thrombocyte and total leucocyte counts were carried out with the blood drawn from the wing vein using Nambiar's diluting fluid¹. A smear was also made from the same blood. Then the birds were decapitated and they were weighed before defeathering them. The body was opened and the viscera was collected in separate polythene bags for each bird. The smears were stained with Wright-Giemsa technique as suggested by Hamre (see Lucas and Jamroz 1974)² and the differential leucocyte was counted following the method adopted by Sharma and Seetharaman³. From the total leucocyte count and the relative percentage values, the absolute counts of each of the white cell types were calculated. The visceral samples were thoroughly examined and worms (*Railletina tetragona*), if any, were recorded according to their size and maturity⁴. The data have been shown in table 1.

Infected cockerels:

Slight drop in the total thrombocyte count was observed. There was no change in the total leucocyte count but the differential (relative and absolute) leucocyte count showed depletion in the numbers of lymphocytes and monocytes and a rise in heterophils, eosinophils and basophils.

Infected pullets:

Total thrombocyte count was almost equal to the normal. Leucopenia was marked and resulted from the fall in the numbers of lymphocytes, monocytes and basophils, which could not be compensated by

Table 1 Thrombocytic and leucocytic counts in cockerels and pullets of 3-4 months age, that were healthy (controls) and infected with *Raillietina tetragona*

S. No.	Bird No.	Weight (g)	TTC (thou./c.mm.)	TLC	Differential leucocytic counts										Fauna of alimentary Canal
					Relative (%)					Absolute (thou./c.mm.)					
					L	M	H	E	B	L	M	H	E	B	
Healthy (Uninfected) Cockerels*															
1-8	**	475.00	46.06	27.90	57.86	13.00	22.00	2.00	5.00	16.31	3.69	6.01	0.54	1.39	NIL
		±58.31	±13.02	±8.74	±5.78	±4.18	3.97	±1.00	±2.81	±5.95	±1.65	±1.73	±0.22	±1.03	
Infected Cockerels															
1.	274	550	64.00	42.00	50	11	32	4	3	21.00	4.68	13.44	1.68	1.26	1 s
2.	277	560	62.00	26.00	26	15	56	1	2	6.76	3.90	14.56	0.26	0.52	1 b
3.	249	450	46.00	34.00	54	7	22	10	7	18.36	2.38	7.48	3.40	2.38	2 s
4.	250	550	30.00	18.00	32	15	30	17	6	5.76	2.70	5.40	3.06	1.06	2 s
5.	271	400	54.00	46.00	35	10	50	1	4	15.10	4.60	23.00	0.46	1.84	3 m
6.	172	580	22.00	24.00	63	9	24	0	4	15.12	2.16	5.76	0.00	0.96	3 m
7.	266	450	76.00	34.00	60	7	28	1	4	20.40	2.38	9.52	0.34	1.36	3 b
8.	251	600	46.00	18.00	63	8	20	6	3	11.34	1.44	3.60	1.08	0.54	4 s
9.	209	490	54.00	40.00	43	12	34	5	6	17.20	4.80	13.60	2.00	2.40	4 m
10.	193	510	20.00	8.00	50	20	17	2	11	4.00	1.60	1.36	0.16	0.88	4 b
11.	166	530	22.00	20.00	51	25	20	0	4	10.20	5.00	4.00	0.00	0.80	5 m
12.	246	600	48.00	38.00	42	9	48	0	11	15.96	3.42	18.24	0.00	4.18	5 b
13.	173	470	46.00	28.00	55	6	31	2	6	15.40	1.68	8.68	0.56	1.68	6 b
14.	168	580	35.00	24.00	42	6	40	1	11	10.08	1.44	9.60	0.24	2.64	17 b
15.	194	460	20.00	38.00	47	8	40	0	5	17.86	3.04	15.20	0.00	1.90	18 b
16.	257	600	44.00	22.00	66	28	3	2	1	14.52	6.16	0.66	0.44	0.22	25 m
17.	43	505	60.00	20.00	30	24	31	13	2	6.00	4.80	6.20	2.60	0.40	50 b
MEAN		522.64	44.18	28.24	47.58	12.94	30.94	3.82	5.29	13.30	3.30	9.43	0.96	1.47	
		±60.05	±16.52	±10.10	±11.75	±6.79	±12.85	±4.87	±3.06	±5.20	±1.44	±5.96	±1.11	±0.98	
Healthy (Uninfected) Pullets#															
1-7	##	716.43	37.43	32.57	59.71	13.29	19.14	2.71	5.14	19.45	4.54	5.36	0.94	1.90	NIL
		±217.69	±27.72	±17.74	±7.26	±5.74	±8.10	±1.66	±2.17	±10.96	±2.71	±3.32	±1.07	±1.61	
Infected Pullets															
1.	153	1000	24.00	24.00	65	12	14	2	7	15.60	2.88	3.36	0.48	1.68	1 m
2.	84	810	60.00	28.00	35	13	38	2	12	9.80	3.64	9.64	0.56	3.36	2 m
3.	5	350	49.00	10.50	53	17	25	2	3	5.57	1.79	2.63	0.21	0.32	2 b
4.	29	600	37.50	19.00	34	23	38	3	2	6.46	4.37	7.22	0.57	0.38	4 b
5.	126	450	50.00	32.00	35	24	31	5	5	11.20	7.68	9.92	1.60	1.60	5 m
6.	359	380	32.00	24.00	65	4	31	0	0	15.60	0.96	7.44	0.00	0.00	11 b
7.	106	530	26.00	27.00	37	12	45	1	5	9.99	3.24	12.15	0.27	1.35	15 b
8.	35	530	39.00	28.50	31	15	33	15	6	8.84	4.28	9.41	4.28	1.71	20 m
9.	124	500	12.00	26.00	25	27	37	5	6	6.50	7.02	0.62	1.30	1.56	30 m
10.	20	400	54.00	36.50	53	16	22	5	4	19.35	5.84	8.03	1.83	1.46	50 m
MEAN		555.00	38.05	25.55	43.30	16.30	31.40	4.00	5.00	10.89	4.17	7.94	1.11	1.34	
		±194.17	±14.35	±6.72	±13.71	±6.48	±8.59	±4.02	±3.07	±4.35	±2.05	±2.82	±1.21	±0.91	

* Mean values of 8 cockerels. ** Bird numbers -- 10, 12, 202, 211, 212, 221, 226 and 298.
 # Mean values of 7 pullets. ## Bird numbers -- 25, 38, 107, 149, 151, 155 and 332.
 TTC = Total thrombocyte count; TLC = Total leucocyte count; L = Lymphocyte; M = Monocyte; H = Heterophil;
 E = Eosinophil; B = Basophil.

RT = *Raillietina tetragona*

s = Small sized worms with a scolex and fewer young proglottids.
 m = Medium sized worms with many matured proglottids.
 b = Big sized (lengthy) worms with many gravid proglottids.

the rise (relative and absolute) in the counts of heterophils and eosinophils. The fall in the numbers of monocytes was only shown by the absolute count, whereas the relative percentage value registered a significant rise.

Obviously, spontaneous infection with *R. tetragona* manifested granular leucocytosis (hetero, eosino and basophilia) and non-granular leucocytopenia (lympho and monocytopenia) in the domestic fowl,

whereas the thrombocyte count did not alter significantly.

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MODIFICATION OF SEX EXPRESSION IN MULBERRY (*M. ALBA* AND *M. INDICA*) BY SILVER THIOSULPHATE

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MODIFICATION of sex expression in mulberry (*Morus* sp) has been reported¹⁻⁴ by several workers using growth regulators, colchicine and certain ionic chemicals. The present paper deals with the modification of sex in two female cultivar of mulberry viz Bilidevalaya (*M. indica* L) and Kanva-2 (*M. alba* L) using silver thiosulphate (STS) for the first time.

Bilidevalaya and Kanva-2 varieties bear only female flowers. Two-year-old potted plants (having 6-8 branches per plant) raised from stem cuttings were treated with aqueous solution of STS in one concentration (1000 ppm). STS solution was prepared just before use by adding excess (8:1) STS to silver nitrate so that equilibrium reaction was shifted towards $Ag(S_2O_3)_2^{3-}$ complex. Tween-20 (0.01%) was used as a wetting agent. The aqueous solution was applied as foliar spray till the point of run-off. There were two replications of 6 plants each for all the treatments including control which received aqueous spray containing only tween-20. Spraying was done daily in the cool hours of the morning at 9.00 AM for 5 consecutive days. Plants were grown under outdoor conditions and were defoliated on seventh day after last spraying to induce bud sprouting.

Flowers were induced after 15 days of last spraying in both the varieties. However, simultaneous initiation of flowers was observed in control

as well as treated plants of both the varieties. The size of the inflorescence was smaller with longer peduncle compared to the control. Flower arrangement was also sparse. On the contrary the parental inflorescences were compact with dense flower arrangement. Inflorescences matured earlier than the normal ones in treated plants. The frequency of occurrence of male inflorescences in var Bilidevalaya was lower (37.5%) as compared to female inflorescences (62.5%) and there were no mixed type of inflorescences (figures 1 and 2). On the other hand, the production of male inflorescences (23.3%) was lower than that of parental type (50.04%) in var Kanva-2. However, mixed type of



Figures 1-4. Control and STS-treated flowering branches. 1. Induced male inflorescence in Bilidevalaya; 2. Control branch of Bilidevalaya bearing female inflorescences; 3. Induced male and mixed inflorescence in Kanva-2; and 4. Control branch of Kanva-2 bearing female inflorescences. (M-Male inflorescence; MI-Mixed inflorescence)