RESULTS

(A) HISTOLOGICAL OBSERVATIONS OF MESENTERIC LYMPH NODES

1- Histology of mesenteric lymph nodes in the control subgroups:

I- At the age of 4 weeks (subgroup 1a):

The lymph node (L.N.) of subgroup Ia was covered by a thin fibrous connective tissue capsule. The surface was partially smooth or indented, it was protruded over the lymphatic follicles and depressed into the extrafollicular zone. The trabeculae were similar in structure to the capsule they extended from the deep surface of the capsule and traversed the cortex.

The parenchyma of the lymph nodes was differentiated into outer cortex [2600-3700 um] and inner medullar [1400-2300 um]

a- The cortex consisted of two areas:

i- An outer peripheral cortex which was deeply stained and heavily populated with small lymphocytes. It was separated from the deep surface of the capsule by the subcapsular sinus. It was formed of folliculo-nodules separated and surrounded by extrafollicular zones of lymphoid tissue which were relatively thin over the bulging part of the folliculo-nodules. At least 10-20 folliculo-nodules were seen per section, they were (250-400 um) in diameter, the follicles of small diameter were usually seen contiguous with the medulla at the periphery of the hilum. The majority of the folliculo-nodules exhibited germinal centers (G.C). However the small follicles near the hilum were usually free of germinal centers. In the germinal center two portions could be differentiated; the outer portion which

was usually deeper in staining and composed of large number of small lymphocytes and few number of macrophages. The inner lightly stained portion toward the center was formed of a large number of large-sized lymphocytes and cells in the process of differentiation into plasma cells. The germinal center was covered by a deeply stained cuff of lymphoid tissue rich in small-sized lymphocytes (Fig. 5).

ii- A deep cortex (the paracortical area): It was covered by and contiguous with the peripheral cortex. It had a characteristic architecture. The deep cortex was (1300-1600 um) in thickness, the periphery of the deep cortex adjacent to the medulla was less populated with lymphocytes and contained a relatively large number of postcapillary venules and macrophages. The central part of the deep cortex was darker and exhibited a marble appearance due to the distribution of lymphocytes.

b. The medulla was relatively large in thickness (2200 um) with a well developed medullary cords (22-24 um each). The medullary cords were separated by wide medullary sinuses, the medulla was connected to the contiguous area of deep cortex.

c. The lymphatic sinuses: the subcapsular sinus was wide over the extrafollicular zone and narrow over the folliculo-nodules. The medullary sinuses were wider than the subcapsular ones. The medullary sinuses had irregular course and frequent anastomoses. Near the hilum, they fused with one another and joined the subcapsular sinus to give rise to the efferent lymphatics which leave the node.

Fig. (5): A photomicrograph of a young control mesenteric lymph node showing single lymphoid follicle with its well developed germinal center.
H & E (Proj. 10x, Obj. 10x).

Statistical observations of this subgroup (Ia) showed that the mean diameter of lymphoid follicles was 394.8 um and of their germinal centers was 99.3 um (Tables 1, 2 & 5).

II- At the age of 9 month (subgroup IIa):

There was an increase in the whole size of L.N., thickness of cortex and medulla, and the number and diameter of L.F and G.C. Statistical observations of this subgroup (IIa) showed that the mean diameter of L.F was 576.8 um and of their G.C was 181.2 um (Tables 1, 3 & 5 and Fig. 6).

III- At the age of 3 years (subgroup IIIa):

There was thickening in the capsule of L.N. and slight decrease in the whole size of L.N. and the size of cortex and an increase in the size of medulla when compared with subgroups Ia and IIa. There was a significant reduction in the diameter of L.F. (353.3 um) and the diameter of G.C. (79.6 μm) (Tables 1, 4 & 5).

2- Effect of dexamethasone on the histology of mesenteric lymph nodes:

I- At the age of 4 weeks (subgroup Ib):

A remarkable decrease was observed in the whole size of mesenteric L.N. (2500-3900), in the thickness of the cortex (1500-2400 um) and the thickness of the medulla (900-1400 um). The lymph follicles were decreased in number (6-12 follciles per section), the number of follicles with G.C. per section was few (1-2). Statistical observations of this subgroup (Ib) showed a marked reduction in the mean diameter of L.F. (262.6 um) and G.C. (51.9 um) in comparison to the control subgroup of this age (Ia) (Tables 1& 2).

Fig. (6): A photomicrograph of an adult control mesenteric lymph node showing multiple large lymphoid follicles with their prominent well developed germinal centers.
H & E (Proj, 10x, Obj. 4x).

II- At the age of 9 months (subgroup IIb):

A remarkable reduction in the whole size of mesenteric L.N, the size of cortex and medulla was observed in subgroup IIb. Also the statistical analysis of this subgroup showed a marked reduction in the mean diameter of L.F (350.1 um) and G.C (94.3 um) in comparison to the control subgroup of the same age (IIa) (Tables 1 & 3 and Fig. 7).

III- At the age of 3 years (subgroup IIIb):

A remarkable reduction in the whole size of mesenteric L.N. and size of cortex with an increase in the size of medulla was observed in subgroup IIIb when compared with subgroups Ib and IIb (Tables 1 & 6). Also there was a marked reduction in the mean diameter of L.F. (209.6 um) and G.C. (37.0 um) when compared with the control subgroup of the same age (IIIa) (Tables 1 & 4).

3- Effect of loratadine on the histology of mesenteric lymph nodes:

I- At the age of 4 weeks (subgroup Ic):

There was no remarkable difference between this subgroup and the control subgroup of the same age (Ia) where the whole size of mesenteric L.N. and the thickness of cortex and medulla were nearly equal. Also statistical observations of the mean diameter of L.F. (398.3 um) and G.C. (104.0 um) of both subgroups showed no significant difference (Tables 1 & 2).

Fig. (7): A photomicrograph of mesenteric lymph node obtained from an adult experimental rabbit administered dexamethasone for 2 weeks showing multiple small sized lymphoid follicles with their small sized germinal centers.
H & E (Proj. 10x, Obj. 4x).

II- At the age of 9 month (subgroup IIc):

Also there was no significant difference between this subgroup and the control subgroup of the same age (IIa) where the whole size of mesenteric L.N. and the thickness of their cortex and medulla were equal. Statistical observations of the mean diameter of L.F. (558.9 um) and G.C. (172.8 um) of both subgroups showed no significant difference (Tables 1 & 3 and Fig. 8).

III- At the age of 3 years (subgroup IIIc):

There was thickening of the capsule and reduction in the whole size of mesenteric L.N. and the size of their cortex and medulla when compared to subgroup Ic and IIc. Statistical observations showed non significant reduction in the mean diameter of L.F. (347.1 um) and the G.C. (77.5 um) when compared to the control subgroup of the same age (IIIa) (Tables 1 & 4).

Fig. (8): A photomicrograph of an adult mesenteric lymph node obtained from experimental rabbit administered loratadine for 2 weeks showing multiple large sized lymphoid follicles with their large sized germinal centers.
H & E (Proj. 10x, Obj. 4x).

(B) THE CYTOLOGY OF BONE MARROW SMEARS

1- Of control subgroups:

I- At the age of 4 weeks (subgroup Ia):

The bone marrow smears in subgroup Ia showed a marked cellularity and the number of fat cells was very mild. Different bone marrow cells; e.g., (promyelocyte, segmented cell, monocyte, lymphocyte and megakaryocyte) were presented in (Fig. 9).

The percent age (%) of transformed lymphocytes was determined and the mean value of cases of this subgroup (Ia) was 24.2% (Tables 1 & 2 and Fig. 10).

II- At the age of 9 month (subgroup IIa):

The cellularity of bone marrow smear of this subgroup (IIa) was mildly reduced and the number and size of fat cells was increased. The percentage of transformed lymphocytes was significantly reduced (20.3%) when compared to subgroup Ia (Tables 1 & 5).

III- At the age of 3 years (subgroup IIIa):

There was a marked reduction in the bone marrow cellularity and a marked increase in the number of fat cells of the obtained bone marrow smears. There was a highly significant reduction in the percentage of transformed lymphocytes (14.4%) when compared with subgroup Ia and a significant reduction when compared with subgroup IIa (Tables 1 & 5).

Fig. (9): A photomicrograph of bone marrow smear obtained from 2 control rabbit of young age showing megakaryocyte, monocyte, promylocyte and lymphocyte.
Giemsa stain (Proj. 10x, Obj. 100 x)

Fig. (10): A photomicrograph of bone marrow smear obtained from a control rabbit showing transformed lymphocytes (arrows).
Giemsa stain (Proj. 10x, Obj. 100x)

2- Effect of dexamethasone on the cytology of bone marrow:

I- At the age of 4 weeks (subgroup Ib):

The cellularity of the bone marrow and fat cells was nearly similar but the % of transformed lymphocytes (16.3%) was significantly reduced when compared to the control subgroup of the same age (Ia); (Tables 1 & 2).

II- At the age of 9 month (subgroup IIb):

The cellularity of the bone marrow was decreased slightly while the number of fat cells and connective tissue fibers increased to some extent. Also the % of transformed lymphocytes was reduced significantly (13.7%) when compared to the control subgroup of the same age (IIa); (Tables 1 & 3).

III- At the age of 3 years (subgroup IIIb):

There was a marked reduction in the cellularity of bone marrow associated with an increase in the number of fat cells and connective tissue fibers of bone marrow smears. Also the % of transformed lymphocytes was decreased to a highly significant level (7.7%) when compared to the control subgroup of the same age (IIIa); (Tables 1 & 4 and Fig. 11).

3- Effect of loratadine on the cytology of bone marrow:

I- At the age of 4 weeks (subgroup Ic):

The cellularity of bone marrow smear, the number of fat cells and the percentage of transformed lymphocytes (23.6%) were similar to the control subgroup of the same age (Ia); (Tables 1 &2).

Fig. (11): A photomicrograph of bone marrow smear obtained from an experimental rabbit administered dexamethasone for 2 weeks showing non transformed lymphocytes, fat cells and connective tissue fibres.

Giemsa stain (Proj. 10x, Obj. 100x)

II- At the age of 9 month (subgroup IIc):

The cellularity of bone marrow, the number of fat cells and the percentage of transformed lymphocytes (19.8%) were nearly equal to the control group of the same age subgroup (IIc); (Tables 1 & 3). However, the cellularity of bone marrow and the percentage of transformed lymphocytes were reduced significantly when compared to the subgroup of the young age (Ic); (Tables 1 & 7).

III- At the age of 3 years (subgroup IIIc):

The cellularity of bone marrow, the number of fat cells, the connective tissue fibers, and the percentage of transformed lymphocytes (14.2%) were nearly equal to the control subgroup of the same age (IIIa); (Tables 1& 4). However, the cellularity of bone marrow and the percentage of transformed lymphocytes were significantly reduced when compared to the subgroup of young age (Ic); (Tables 1 & 7).

Table (1): Showing the diameter of lymphoid follicles (LF), germinal centers (gc) and the percentage of transformed lymphocytes (%tl) of the 120 case of the present study.

	Group I					Group II					Group III			
	No	lf	gc	% tl		No.	lf	gc	% tl		No.	lf	gc	% tl
Ia	1	399.4	92.10	24.6	IIa	41	560.00	175.0	20.50	IIIa	81	350.00	83.0	15.10
	2	382.9	99.60	23.7		42	575.00	172.0	21.10		82	345.00	74.0	14.30
	3	396.1	92.20	23.9		43	550.00	178.0	20.60		83	355.00	81.0	13.50
	4	396.8	107.3	25.3		44	570.00	180.0	19.50		84	360.00	85.0	15.10
	5	430.7	109.3	23.8		45	570.00	177.0	20.60		85	342.00	73.0	14.90
	6	393.4	103.5	22.9		46	572.00	170.0	21.60		86	344.00	84.0	14.70
	7	381.8	92.00	24.6		47	570.00	175.0	19.20		87	354.00	79.0	14.20
	8	388.4	92.00	25.1		48	574.00	171.0	19.30		88	362.00	81.0	13.60
	9	390.6	97.80	23.6		49	578.00	176.0	20.30		89	357.00	76.0	14.50
	10	387.5	107.2	24.2		50	579.00	178.0	20.50		90	365.00	80.0	14.40
Ib	11	243.8	46.00	16.1	IIb	51	350.00	95.00	14.20	IIIb	91	210.00	35.0	8.20
	12	241.5	51.80	15.5		52	345.00	97.00	14.10		92	205.00	30.0	7.70
	13	260.0	44.50	17.5		53	355.00	87.00	13.60		93	207.00	39.0	7.30
	14	259.9	40.30	15.1		54	349.00	92.00	13.50		94	201.00	36.0	8.10
	15	264.5	69.00	16.2		55	332.00	89.00	13.10		95	215.00	30.0	7.20
	16	255.3	69.00	17.1		56	360.00	93.00	14.20		96	206.00	38.0	7.50
	17	266.6	44.50	16.2		57	346.00	95.00	12.90		97	217.00	41.0	7.90
	18	264.5	46.00	16.7		58	349.00	99.00	13.50		98	220.00	35.0	8.20
	19	285.2	41.40	17.3		59	356.00	96.00	14.20		99	211.00	39.0	7.80
	20	264.5	69.00	15.9		60	352.00	94.00	13.90		100	217.00	40.0	7.30
	21	270.3	57.50	16.7		61	357.00	100.0	13.40		101	206.00	41.0	7.60
	22	263.2	48.30	17.1		62	352.00	98.00	13.60		102	209.00	40.0	7.80
	23	264.5	51.80	15.6		63	358.00	94.00	14.20		103	200.00	39.0	7.40
	24	285.7	48.30	16.3		64	344.00	90.00	13.10		104	207.00	38.0	7.80
	25	249.2	50.60	15.8		65	347.00	96.00	13.70		105	213.00	34.0	7.60
Ic	26	368.0	92.00	23.0	IIc	66	545.00	170.0	20.20	IIIc	106	340.00	81.0	13.90
	27	379.0	106.0	24.1		67	570.00	173.0	20.50		107	355.00	79.0	14.20
	28	391.0	115.0	23.6		68	560.00	177.0	19.50		108	346.00	75.0	15.10
	29	403.0	107.0	22.8		69	554.00	169.0	19.80		109	348.00	79.0	14.50
	30	414.0	119.0	24.3		70	558.00	165.0	19.10		110	352.00	70.0	14.90
	31	394.0	92.00	24.0		71	565.00	171.0	19.40		111	354.00	73.0	14.30
	32	386.0	104.0	23.8		72	568.00	172.0	20.20		112	342.00	82.0	13.20
	33	425.0	92.00	23.5		73	550.00	178.0	19.70		113	347.00	75.0	13.10
	34	405.0	105.0	24.8		74	553.00	180.0	19.30		114	350.00	77.0	13.90
	35	430.0	109.0	22.0		75	562.00	174.0	19.50		115	343.00	79.0	14.30
	36	398.0	107.0	23.4		76	555.00	170.0	19.70		116	346.00	77.0	14.80
	37	394.0	98.00	24.0		77	564.00	175.0	19.20		117	349.00	82.0	14.60
	38	390.0	102.0	23.0		78	569.00	165.0	20.50		118	350.00	81.0	14.80
	39	395.0	105.0	23.3		79	554.00	174.0	20.30		119	340.00	78.0	14.20
	40	402.0	107.0	23.7		80	557.00	179.0	20.40		120	345.00	75.0	13.80

Table (2): Showing the mean ($\bar{X}$), the standard deviation (SD), and the Student t-test (T) of the diameter of lymph follicles (L.F), germinal centers (G.C) and the percentage of transformed lymphocytes (% T.L) in subgroups I (young age of 4 weeks).

— —	Diameter of L.F			Diameter of G.C			% T.L		
	$\bar{X}$	SD	T	$\bar{X}$	SD	T	$\bar{X}$	SD	T
Ia	394.8	13.9	22.6** a&b	99.3	7.11	13.6** a&b	24.2	0.74	27.1** a&b
Ib	262.6	12.5	25.7** b&c	51.9	9.86	15.98** b&c	16.3	0.71	28.3** b&c
Ic	398.3	16.2	0.6 a&c	104.0	7.9	1.35 a&c	23.6	0.69	2.14 a&c

* = Significant at $P < 0.01$

** = Highly significant at $P < 0.005$

Table value at $P < 0.01 = 2.500$

Table value at $P < 0.005 = 2.807$

Table (3): Showing the mean ($\bar{X}$), the standard deviation (SD), and the Student t-test (T) of the diameter of lymph follicles (L.F), germinal centers (G.C) and the percentage of transformed lymphocytes (% T.L) in subgroup II (middle age of 9 months).

— —	Diameter of L.F			Diameter of G.C			% T.L		
	$\bar{X}$	SD	T	$\bar{X}$	SD	T	$\bar{X}$	SD	T
IIa	576.8	13.3	61.2** a&b	181.2	4.13	51.1** a&b	20.3	0.78	29.1** a&c
IIb	350.1	7.04	79.4** b&c	94.3	3.68	51.5** b&c	13.7	0.44	36.0** b&c
IIc	558.9	12.35	1.8 a&c	172.8	4.6	1.9 a&c	19.8	0.49	2.19 a&c

* = Significant at $P < 0.01$

** = Highly significant at $P < 0.005$

Table value at $P < 0.01 = 2.5$

Table value at $P < 0.005 = 2.807$

Table (4): Showing the mean ($\bar{X}$), the standard deviation (SD), and the Student t-test (T) of the diameter of lymph follicles (L.F), germinal centers (G.C) and the percentage of transformed lymphocytes (% T.L) in subgroup III (old age of 3 years).

—	Diameter of L.F			Diameter of G.C			% T.L		
	$\bar{X}$	SD	T	$\bar{X}$	SD	T	$\bar{X}$	SD	T
IIIa	353.3	7.8	58.5** a&b	79.6	4.12	28.38** a&b	14.4	0.56	33.3** a&b
IIIb	209.6	5.9	70.8** b&c	37.0	3.5	31.5** b&c	7.7	0.32	37.9** b&c
IIIc	347.1	4.67	2.5* a&c	77.5	3.46	1.38 a&c	14.2	0.59	0.94 a&c

* = Significant at $P < 0.01$

** = Highly significant at $P < 0.005$

Table value at $P < 0.01 = 2.5$

Table value at $P < 0.005 = 2.807$

Table (5): Showing the mean ($\bar{X}$), the standard deviation (SD), and the Student t-test (T) of the lymph follicles (L.F), germinal centers (G.C) and the percentage of transformed lymphocytes (% T.L) in the control subgroups of the different ages.

—	Diameter of L.F			Diameter of G.C			% T.L		
	$\bar{X}$	SD	T	$\bar{X}$	SD	T	$\bar{X}$	SD	T
Ia	394.8	13.9	29.9** I&II	99.3	7.11	31.5** I&II	24.2	0.74	11.37** I &II
IIa	576.8	13.3	45.9** II &III	181.2	4.13	55.1** II&III	20.3	0.78	19.45** II&III
IIIa	353.3	7.8	8.2** I&III	79.6	4.12	7.58** I&III	14.4	0.56	33.29** I &III

* = Significant at $P < 0.01$

** = Highly significant at $P < 0.005$

Table value at $P < 0.01 = 2.5$

Table value at $P < 0.005 = 2.807$

Table (6): Showing the mean ($\bar{X}$), the standard deviation (SD), and the Student t-test (T) of the lymph follicles (L.F), germinal centers (G.C) and the percentage of transformed lymphocytes (% T.L) in the Dexamethasone subgroups of the different ages.

—	Diameter of L.F			Diameter of G.C			% T.L		
	$\bar{X}$	SD	T	$\bar{X}$	SD	T	$\bar{X}$	SD	T
Ib	262.6	12.5	23.67** I&II	51.9	9.86	15.6** I&II	16.3	0.71	12.31** I &II
Iib	350.1	7.04	59.25** II&III	94.3	3.68	43.23** II&III	13.7	0.44	42.37** II&III
IIIb	209.6	5.9	14.86** I&III	37.0	3.59	5.49** I&III	7.7	0.32	42.96** I &III

* = Significant at P < 0.01

** = Highly significant at P < 0.005

Table value at P < 0.01 = 2.5

Table value at P < 0.005 = 2.807

Table (7): Showing the mean ($\bar{X}$), the standard deviation (SD), and the Student t-test (T) of the lymph follicles (L.F), germinal centers (G.C) and the percentage of transformed lymphocytes (% T.L) in the loratadine subgroups of the different ages.

—	Diameter of L.F			Diameter of G.C			% T.L		
	$\bar{X}$	SD	T	$\bar{X}$	SD	T	$\bar{X}$	SD	T
Ic	398.3	16.2	35.04** I&II	104.0	7.9	29.09** I&II	23.6	0.69	17.16** I&II
IIc	558.9	7.35	94.15** II&III	172.8	4.6	63.94** II&III	19.8	0.49	28.27** II&III
IIIc	347.1	4.67	11.77** I&III	77.5	3.46	11.87** I&III	14.2	0.59	39.98** I&III

* = Significant at P < 0.01

** = Highly significant at P < 0.005

Table value at P < 0.01 = 2.5

Table value at P < 0.005 = 2.807