CHAPTER - 5

Haematological parameters in female rats fed with different ratios of fish meal during F1 and F2 generation

5.1.1 Haemoglobin (Hb) and Red Blood Cell (RBC)

The decrease in RBC count and Hb concentrations was more conspicuous in rats fed with only fish meal (RBC: 4.47±0.25 x10^{12}/L, Hb: 13.6±0.12g/dl) when compared with that of control (9.38±0.14 and 17.4±0.37g/dl). In Animals fed with different ratios of fish meal (1:1, 1:2 and 1:3) RBC and Hb count showed a gradual decrease (08.61±0.24 x10^{12}/L, 6.80±0.23 x10^{12}/L and 5.85±0.10 x10^{12}/L and 15.8±0.17 g/dl, 14.2±0.54 g/dl and 13.8±0.12 g/dl) when compared to control during F1 generation. There was no significance difference in Hb between 1:3 and only fish meal (p=0.046) (Table: 17).

Hb content of control rat showed 17.4±0.07 g/dl during F2 generation. When rats were exposed to different ratios of fish meal (1:1, 1:2, and 1:3) a gradual decrease of Hb content (14.4±0.5 g/dl, 12.0±0.4 g/dl and 10.9±0.4 g/dl) was noticed. A significant decrease was observed in the rats fed with only fish meal (09.4±0.1g/ dl) compared with that of control. Values are significant at p<0.05. RBC content was found to be 11.2±0.4 x10^{12}/L in control rats. There was a significant decrease of RBC in the ratios of 1:1, 1:2, 1:3 and only fish meal (9.6±0.0 x10^{12}/L , 6.5±0.1 x10^{12}/L, 5.6±0.01 x10^{12}/L and 3.4±0.008 x10^{12}/L) respectively. Values are significant at p<0.05 (Table: 19).
5.1.2 Mean Corpouscular Volume (MCV)

MCV content was found to have decreased in 1:1, 1:2 and 1:3 ratios of fish meal (85.4±1.40 Fl, 80.1±0.41 Fl, 70.2±1.08 Fl). Further, decrease in MCV content was noticed in only fish meal treated rats (65.4±1.26 Fl) when compared with control (87.8±0.98 Fl) during F1 generation. Values are significant at p<0.05 (Table: 17).

During F2 generation a drastic decrease of MCV level were noticed in the ratios 1:1, 1:2 and 1:3 (83.13±0.76 Fl, 80.1±0.08 Fl and 70.38±0.11 Fl) and decrease were more pronounced in rats fed with only fish meal (64.3±0.76 Fl) when compared with control (87.93±0.05 FL). Values are significant at p<0.05 level. (Table: 19).

5.1.3 Packed Cell Volume (PCV)

PCV count showed a gradual decrease in animals fed with increased ratios of 1:1 (46.7±0.58 %), 1:2(45.8±0.31 %), and 1:3 (42.3±0.82%) fish meal. Whereas, the animals fed with only fish meal showed significant decrease (42.6±1.09%) in PCV content when compared to control (50.1±0.60%). There was no significance difference in PCV count between 1:2 and 1:3 (p=0.076), 1:3 and only fish meal (p=0.086) (Table: 17).

PCV count decreased in all the concentration of 1:1, 1:2 and 1:3 fish meal ratios (45.38±0.57 %, 43.68±1.06 %, and 42.7±0.41 %). Further, decreasing trend was noticed in rats fed only fish meal (40.56±0.75%) when compared with that of control in F2 generation (50.16±0.08%). There was no significant difference in PCV between 1:1 and 1:2 (p=0.088), 1:3 and only fish meal (p=0.092). (Table: 19).
5.1.4: Mean Corpuscular Hemoglobin (MCH)

MCH content decreased in all the ratios of fish meal (31.4±0.67 pg (1:1), 28.8±0.40 pg (1:2), 26.0±0.45 pg (1:3) and 20.2±0.56 pg (only fish meal) when compared with control (32.9±1.61 pg) during F1 generation. Values are significant at p<0.05 (Table: 17).

Control rat showed MCH value of 32.9±1.17 pg. Decrease in MCH content were noticed in the rats fed with different ratios of fish meal 1:1, 1:2, 1:3 and only fish meal during F2 generation (30.63±0.43 pg, 28.73±0.08 pg, 22.1±0.08 pg and 19.68±0.57 pg). Values are significant at p<0.05 level (Table: 19).

5.1.5: Mean Corpuscular Haemoglobin Concentration (MCHC)

Rats fed with fish meal at different ratios showed gradual decrease of MCHC content 1:1 (32.6±0.85 g/dL), 1:2 (1:3 32.0±0.54 g/dL), 1:3 (30.8±0.52 g/dL) and further, a significant decrease was noticed in only fish meal fed rats (28.9±0.52 g/dL) when compared to control (35.6±1.24 g/dL ). There was no significant difference in MCHC between 1:1 and 1:2 (p=0.081) (Table: 17).

MCHC content showed decreasing trend in rats fed with 1:1, 1:2 and 1:3 ratios of fish meal (31.4±0.11 g/dL, 32.0±0.05 g/dL, and 28.8±0.10 g/dL). When the rats were fed with only fish meal during F2 generation, a drastic decrease of MCHC content (26.71±0.14 g/dL) was noticed when compared with control (35.6±0.08 g/dL). There was no significant difference in MCHC between 1:1 and 1:2 (p=0.085). (Table: 19).
5.1.6: Platelet Count

Control animals showed platelet count of 5.50±0.14 l/cu. A gradual decrease of platelets count was noticed in the rats fed with ratios of fish meal 1:1, 1:2 and 1:3 respectively (4.78±0.40 l/cu, 3.18±0.08 l/cu and 2.76±0.04 l/cu). Further, a significant reduction in platelet count was observed in rats fed with only fish meal during F1 generation (2.09±0.005 l/cu). There was no significant difference in platelet count between 1:2 and 1:3 (p=0.079). (Table: 17).

F2 generation control animals showed platelet count of 5.53±0.10 l/cu. A gradual decrease of platelets count was noticed in the rats fed with ratios of 1:1, 1:2 and 1:3 (3.83±0.40 l/cu, 3.17±0.01 l/cu and 2.76±0.04 l/cu) fish meal respectively. Further, a significant reduction in platelet count was observed in rats fed with only fish meal when compared with that of control (2.08±0.005 l/cu). There was no significant difference in platelet count between 1:2 and 1:3 (p=0.079). (Table: 19).

5.2 Differential Leucocyte Count

The differential counts of the total leucocytes are presented in Table: 18 & 20.

The lymphocyte count were found to be maximum (44.3±1.63 %) in control rat and followed by significant decrease in rats fed with increasing ratios of 1:1, 1:2, 1:3 and only fish meal (43.1±1.16 %, 41.6±0.81%, 39.0±0.89%, 37.1±0.75 %) during. The percentage of neutrophils, eosinophils, monophils and basophils significantly varied in different ratios of fish meal when compared with control. Neutrophils in control rats were
57.1±1.17%. significant decrease was observed in 1:1, 1:2, 1:3 (53.5±1.51%, 50.1±1.47%, and 46.0±1.78%) and drastic decrease was noticed in only fish meal fed rats (42.0±0.89%) compared with that of control. The percentage eosinophils, mononphils and basophils in control rats was 6.64±0.45%. 1.07±0.00%, 0.55±0.01%. Rats fed with fish meal at the ratios of 1:1, 1:2 and 1:3 showed decrease in percentage eosinophil (5.44±0.22%, 4.61±0.26%, 3.66±0.08%), mononphils (1.01+0.02%, 0.96±0.05%, 0.60±0.05%) and basophils (0.45±0.01%, 0.36±0.00%, 0.36±0.00%). A significant decrease was observed in only fish meal fed rats (2.92±0.19%, 0.34±0.0%, and 0.26±0.01%) There was no significance difference in Lymphocytes between control and 1:1 (p=0.152), 1:3 and only fish meal (p=0.168) and mononphils between control and 1:1 (0.057), 1:1 and 1:2 (p=0.053) (Table: 18).

In F2 generation control rats showed the percentage (%) of neutrophils (57.18±0.07 %) lymphocytes (44.3±1.63%), eosinophils (6.61±0.02 %), mononphils (1.07±0.01 %) and Basophils (0.55±0.008 %). When the rats were fed with different ratios of fish meal (1:1, 1:2 and 1:3), it was observed that there was a markable decrease in the percent of the above parameters. There was significant reduction in the percentage of neutrophils (51.83±0.60%, 50.83+ 0.05%, and 46.15±0.10%), lymphocytes (44.3±1.63%, 41.6+ 0.82%, 41.05±1.12%), eosinophils (06.61±0.02%, 4.60+ 0.008%, 03.65±0.01 %), mononphils (1.01±0.01%, 0.97+ 0.01%, 0.59±0.01%) and basophils (0.45±0.008%, 0.36+ 0.008%, 0.34+0.01%). A significant decrease in the above parameters was observed in rats fed with only fish meal (41.5±0.58, 37.15±0.05, 1.89±0.04, 0.32±0.01 and 0.26±0.01) when compared with that of control. There was no
significance difference in lymphocytes between control and 1:1
(p=0.067), 1:3 and only fish meal (p=0.075), monophils between
control and 1:1 (0.084). (Table: 20).