CHAPTER - 6

Biochemical changes in ovary and uterus of female rats fed with different ratios of fish meal during F1 and F2 generation

6.1 Ovary:

6.1.1 Protein:

During F1 generation the rats fed with 1:1 ratio of fish meal showed not much variation in ovarian protein content (55.1±1.47mg/g) when compared to control (56.1±2.16mg/g). A drastic reduction in protein content was noticed in 1:2 and 1:3 ratios (53.0± 1.09 mg/g and 47.2±1.70 mg/g) of fish meal. A significant decrease in protein content was observed in rats fed with only fish meal (42.1±0.55 mg/g) when compared with control. There was no significant difference in protein content between control and 1:1 (p=0.433), 1:1 and 1:2 ratios (p=0.122). (Table: 21 & Fig. XIII)

During F2 generation the protein content in the control ovary was 55.3± 1.2 mg/g . A gradual decrease of protein content was observed in rats fed with 1:1 and 1:2 ratios of fish meal (52.16 ±0.75 mg/g and 51.0 ±0.63 mg/g). Further, a drastic reduction in the protein content was noticed in rats fed with 1:3 ratios and only fish meal (43.33±1.05 mg/g and 38.41± 1.20 mg/g) when compared to that of control. (Table: 22 & Fig. XV). There was no significant difference in protein concentration between 1:1 and 1:2 ratios (p=0.286).

6.1.2 Glycogen:
Ovarian glycogen content was found to have a gradual decrease in all the ratios of fish meal 1:1 (3.08± 0.07 mg/g), 1:2 (2.83 ±0.08 mg/g) and 1:3 (2.15±0.05 mg/g) and a significant decrease was observed in rats fed with only fish meal (1.85± 0.05) when compared with control (3.58± 0.14 mg/g) during F1. Values are significant at p<0.05 level. (Table: 21 & Fig. XIII)

During F2 generation glycogen content in the ovary showed a gradual decrease in all the ratios of fish meal as in 1:1 (2.93±0.05 mg/g), 1:2 (2.55±0.05 mg/g), 1:3 (1.8 ±0.06 mg/g) and only fish meal fed rats (1.33±0.08 mg/g) when compared to that of control (3.35±0.15 mg/g). Values are significant at p<0.05 level. (Table: 22 & Fig. XV)

6.1.3 Cholesterol:

The cholesterol content in F1 generation control rats showed the value of 39.45±0.46 mg/g. When the rats were fed with the ratio of 1:1, 1:2 and 1:3 showed decrease of cholesterol content in the ovary (37.71±0.59 mg/g, 35.68±1.68 mg/g, & 28.88±1.19 mg/g). Further, decrease in Cholesterol content was more conspicuous in rats fed with only fish meal (27.1±1 0.59 mg/g) when compared with that of control. There was no significant difference in Cholesterol concentration between control and 1:1(p=0.049), 1:3 and only fish meal fed rats (p=0.044). (Table: 21 & Fig. XIII)

During F2 generation cholesterol content in the ovary of control rats was 37.93± 0.96 mg/g. In rats fed with 1:1 and 1:2 ratios of fish meal showed a gradual decrease (36.05±0.58 mg/g and 35.51±0.39 mg/g) in cholesterol content. Drastic reduction in cholesterol concentration was observed in the rats fed with 1:3 ratio of fish meal as 28.9±0.62 mg/g. Significant decrease in the
ovarian cholesterol was noticed in the rats fed with only fish meal (23.2±0.64 mg/g) compared to that of control. There was no significant difference in Cholesterol concentration between 1:1 and 1:2 (p=0.346). (Table: 22 & Fig. XV)

6.2 Uterus:

6.2.1 Protein:

Protein content in the uterus of rats fed with 1:1 ratio (39.23±0.41 mg/g) of fish meal showed not much variation when compared with that of control (40.31±0.36 mg/g) during F1 generation. Decreased uterine protein content was observed in the rats fed with 1:2 (36.88±0.63 mg/g) ratios fish meal, a drastic significant decrease was observed in 1:3 (30.11±0.41 mg/g) ratios and more significant decrease was noticed in rats fed with only fish meal (26.41±1.41 mg/g) when compared with control. There was no significant difference in protein concentration between control and 1:1(p=0.128) ratio. (Table: 21 & Fig. XIV)

Uterus of rats fed with 1:1 ratio of fish meal showed decreased protein content (36.83±0.61 mg/g) in comparison with that of control rats (40.28±0.22 mg/g) during F2 generation. Further reduction of ovarian protein was observed in the rats fed with 1:2 ratio (34.03±0.75 mg/g). However, a drastic decrease in protein content was observed in rats of 1:3 ratios (28.8±1.22 mg/g) and more significant decrease was noticed in only fish meal fed rats (25.08±0.76 mg/g) in comparison with control rats. Values are significant at p<0.05. (Table: 22 & Fig. XVI).
6.2.3 Glycogen:

During F1 generation the glycogen content in the uterus of control rats showed the value of 2.83±0.05 mg/g. In rats fed with different ratios of fish meal decreasing trend in the uterine glycogen content was noticed in 1:1 (2.41±0.17 mg/g), 1:2 (2.35± 0.54 mg/g), 1:3 (1.93±0.08 mg/g) and only fish meal (1.46± 0.12 mg/g) when compared to control. There was no significant difference in Glycogen content between 1:1 and 1:2 ratios (p=0.813). (Table: 21 & Fig. XIV)

The Uterine glycogen content in the control rats showed the value of 2.56±0.18 mg/g) in F2 generation. When the rats were fed with 1:1 and 1:2 ratios of fish meal, uterine glycogen content was found to be decreased (2.16±0.17 mg/g and 2.15±0.83 mg/g). Further a drastic decrease in glycogen content was observed in 1:3 ratios of fish meal (1.65±0.14 mg/g). However, rats fed with only fish meal (1.16±0.05 mg/g) showed a significant decrease in the glycogen content when compared with control. There was no significant difference in glycogen content between 1:1 and 1:2 (p=0.999) (Table: 22 & Fig. XVI).

6.2.3 Cholesterol:

Cholesterol content in the uterus of control rats (17.28±0.23 mg/g), a gradual increase in the cholesterol content was noticed in 1:1 and 1:2 ratios of fish meal (19.0±0.54 mg/g and 19.85±0.34 mg/g) during F1 generation. However a drastic increase in the cholesterol content was observed in the rats fed with 1:3 ratios and only fish meal fed rats (24.33±1.66 mg/g and 28.48± 0.90 mg/g). There was no difference in cholesterol content
between control and 1:1 (p=0.022), 1:1and1:2 ratios (p=0.489). (Table: 21 & Fig. X1V)

During F2 generation the cholesterol content showed increasing trend in all the ratios of fish meal, 1:1 (19.53+0.17 mg/g), 1:2 (21.21+0.57 mg/g), 1:3 (26.36+0.90 mg/g) and only fish meal (29.58+0.73mg/g) when compared with control rats (17.8+0.32 mg/g). Values are significant at p<0.05. (Table: 22 & Fig. XVI).