CHAPTER - 7

Two generation reproductive performance in female rats fed with different ratios of fish meal during F1 and F2 generation

The reproductive performance of female rats fed with different ratios of fish meal are summarized (table 23 & 24).

7.1: Fertility index (%)

Percentage of fertility index in control rats was 100% in the F1 generation. Decrease of fertility index was noticed in 1:1 ratio of fish meal (93.75 %), further, a significant decrease of fertility index was noticed in the ratios of 1:2 (88.23 %), 1:3 (83.33 %) and only fish meal (83.3 %) when compared to that of control. (Table: 23).

In F2 generation percentage of Fertility index in 1:1 ratio was (93.3 %) when compared with that of control (100%), Decrease in fertility index was noticed in 1:2 ratios (86.6 %) and a drastic decrease was observed in 1:3 ratios (73.3 %) There was a significance difference observed in the fertility index in only fish meal fed rats (66.6 %) when compared with that of control. (Table: 24)

7.2: Gestation Length:

The mean gestation length in control was and 1:1 ratio of fish meal fed rats were 21.3±0.51 and 21.5±0.54 in F1 generation. A slight increase in gestation length was noticed in
rats fed with 1:2 (22.33±0.51) and 1:3 ratios (22.83±0.40). A significant increase in gestation length was observed in rats fed with only fish meal (23.16±0.75) when compared with that of control. There was no significant difference in gestation length between control and 1:1 (p= 0.985), 1:1 and 1:2 (p=0.105), 1:2 and 1:3 (p=0.543) and 1:3 and only fish meal (p=0.838). (Table: 23)

The mean gestation length in control group of rats was (21.33±0.51) during F2 generation. Gestation length in 1:1 and 1:2 ratios did not show much difference (21.5±0.54 and 22.66±0.51), when compared with that of control. Increase in gestation length was observed in 1:3 ratios (23.16±0.54) and a significant increase was in only fish meal fed rats (23.5±0.75) in comparison with that of control. No significant difference in gestation length between control and 1:1 (p= 0.987), 1:2 and 1:3 (p= 0.129), 1:2 and only fish (p= 0.581), 1:3 and only fish meal fed rats (p= 0.857). (Table: 24)

7. 3: Delivery Index (%)

Percentage of Delivery index in rats of control groups was found to be (100 %) during F1 generation. In rats fed with 1:1 ratio of fish meal, the delivery index decreased to 92.22 %. Further, the percentage of delivery index was found to decrease to 91 % in 1:2 ratios, where as a drastic decrease in delivery index was noticed in 1:3 ratios (78.94 %) and significant decrease in percentage of delivery index was in only fish meal fed rats (73 %) compared with that of control. (Table: 23).

In F2 generation the percentage of Delivery index in rats of control groups was found to be (100 %). In rats of 1:1 ratio of fish meal delivery index decreased to (92.2%), whereas percentage of delivery index decreased further in 1:2 and 1:3 ratios (68.5 %, 68.1 %). However, a significant decrease in
percentage of deliver index was noticed in only fish meal fed rats (55.1%) compared with that of control. (Table: 24)

7.4: Corpora lutea

In F1 generation the number of corpora lutea in the control rats was 18.83±0.75. Decrease in number of corpora lutea was observed in rats fed with 1:1 1:2 ratios of fish meal (14.66±1.03, 14.26±1.16). However, a drastic decrease in number of corpora lutea was noticed in the 1:3 and only fish meal (12.66 ratio ±0.81, 11.66±0.81) compared with that of control (Table: 23). There was no difference in number of corpora lutea between 1:1 and 1:2 (p=0.882), 1:2 and 1:3 (p=0.068) and 1:3 and only fish meal (p=0.363).

Number of corpora lutea in F2 generation was found to decrease in 1:1 ratio (15.66±0.51) when compared with control (18.0 ±0.63). Decrease in corpora lutea was noticed in 1:2 and 1:3 ratios of rats fed with fish meal (14.66±0.51, 13.16±1.16) and a significant decrease was observed in only fish meal fed rats (13.83±0.75) when compared with that of control. There was no difference in Number of corpora lutea between 1:1 and 1:2 (p=0.182), 1:2 and only fish meal fed rats (p=0.340), 1:3 and only fish meal (p=0.557) (Table: 24).

7.5: Implantation

Number of implantation in the rats of 1:1 ratio was 12.83±0.40 which reduced with that of control (13.1± 0.40) during F1 generation. Decrease in number of implantation was noticed in rats fed with 1:2 ratios (11.66±1.03). Significant decrease in number of implantation was observed in rats fed with 1:3 ratios (9.5±0.54) and only fish meal (8.66 ±0.51) fed rats when compared with that of control. There was no significant difference
in number of implantations between control and 1:1 (p= 0.886) and 1:3 and only fish meal (p=0. 178) (Table: 23).

During F2 generation number of implantations in control rats was (13.16±0.40). In 1:1 ratio the number of implantation (13.0±0.89) did not show much reduction compared with control, whereas in 1:2 ratios the number of implantation decreased to (12.16±0.75). Further, decrease in number of implantation was noticed in 1:3 ratios (10.5±1.64) and a significant decrease was only in fish meal fed rats (9.5±1.51). There was no difference in number of implantations between control and 1:1 (p= 0.999) control and 1:2 (p= 0.563) 1:1 and1:2 (p= 0.716) and 1:3 and only fish meal (p=0. 563) (Table: 24).

7.6: Number of Resorptions

During F1 generation the control rats showed the number of resorption number as 1.83± 0.75. Increased number of resorption was observed in rats fed with 1:1, 1:2 1:3 ratios (3.33±0.51, 2.66±1.03, and 3.0±1.47). A significant increase was observed in rats fed with only fish meal (3.8± 0.89) when compared with control. There was no difference in resorption number between control and 1:1 (p=0.924), control and 1:2 (p=0.66), control and only fish meal (p=0.344), 1:1 and1:2 (p= 0.982), 1:1and 1:3 (p= 0.138), 1:1 and only fish meal (p = 0.813), 1:2 and1:3 (p=0.344) , 1:2 and only fish meal (p = 0.982) and 1:3 and only fish meal (p= 0.66) (Table: 23).

Resorption number in F2 generation control rat was (1.16±0.40). Increased resorption number was noticed in 1:1 ratio 3.83±1.47. Further resorption number increased to 4.5±0.75 in 1:2 and 4.8± 0.54 in 1:3 ratios. Further, a significant increase in resorption number was noticed in only fish meal fed rats (5.00±0.89) in comparison with that of control. There was no significant
difference in resorption number between 1:1 and 1:2 (p=0.325), 1:1 and 1:3 (p=0.192), 1:1 and only fish meal (p=0.699), 1:2 and 1:3 (p=0.997), 1:2- only fish meal (p=0.996) and 1:3 - only fish meal (p=0.867). (Table: 24).

7.7: Pups delivered

Number of pups delivered by control rats in F1 generation was 12.66±0.51. In rats fed with 1:1 ratio a slight decrease in the number of pups delivered was noticed (11.83±0.75). Further, there was drastic decrease in r 1:2 ratio (9.00±1.09). However a significant decrease in number of pups delivered was observed in 1:3 (5.66±0.81) and only fish meal fed rats (4.66±1.03) compared with that of control. No significant difference was seen in number of pups delivered between control and 1:1 (p=0.474) and 1:3 and only fish meal fed rats (p=0.297) (Table: 23). During F1 generation the control rat pups weighed (Day1) 6.08±0.11 g. Decrease in weight of the pups was noticed in rats fed with 1:1 ratio (5.71±0.16 g). Further reduction in weight of the pups was noticed in 1:2 and 1:3 ratios. (5.08±0.09 g and 4.78±0.09 g). A drastic reduction in weight of pups 4.13±0.05g was observed in only fish meal fed rats (Table: 23).

Number of pups delivered in 1:1 ratios of rats fed with fish meal was (12.16±0.75) when compared with control rats (13.16±0.40 during F2 generation. Decrease in number of pups was noticed in 1:2 and 1:3 ratios (8.83±0.75 and 5.00±1.26). Further a significant decrease was observed in fish meal fed rats (3.83±1.16) compared with that of control. No significant difference was seen in Number of pups delivered between 1:3 and only fish meal fed rats (p=1.000). (Table: 24). In F2 generation reduction in weight of the pups (Day1) was noticed in 1:1 ratio (5.45±0.12 g) when compared with that of control (6.08±0.11 g). Further, the weight of pups reduced in the ratios of 1:2 (5.01±
0.13) and 1:3 (4.48 ±0.33g). Significant reduction in weight of pups was noticed in only fish meal fed rats (4.13± 0.05g) compared with that of control. Values are significant at p<0.05. (Table: 24).

7.8: Number of Live pups (day 21)

On day 21, the number of live pups in control was 12.00±.89 in F1 generation. Decrease in number was observed in the rats fed with 1:1 ratio of fish meal (10.00±0.63). Further drastic decrease was noticed in rats fed with 1:2 (5.66± 1.50), 1:3 (2.16± 0.40), and only fish meal (1.33± 0.81) respectively. (Table: 23). No significant difference was seen number of Live pups on day 21 between 1:3 and only fish meal fed rats (p= 0.537). (Table: 23). During F1 generation the weight of the pups (Day21) in the control rats was 29.76± 0.7 g. Reduction in the weight was noticed in rats fed with 1:1 ratio of fish meal (27.71±0.17 g). Further reduction was observed in 1:2 and 1:3 ratios (25.38±0.13 and 23.4± 0.47). A significant reduction in the weight of the pups was noticed in only fish meal fed rats (21.2 ±0.10g) compared with that of control. Values are significant at p<0.05. (Table: 23).

Number of Live pups on day 21 was (12.0± 0.89) in control groups in F2 generation. In 1:1 ratio of rats fed with fish meal number decreased to 8.66± 0.51. Further a drastic decrease in number was noticed in 1:2 and 1:3 ratios (3.83± 0.75 and 1.33± 0.51). A significant decrease was observed in only fish meal fed rats comparison with that of control (1.00±1.09). No significant difference was noticed in the number of Live pups on day 21 between 1:3 and only fish (p= 0.947). (Table: 23). On day 21, the rats weighed 29.76± 0.70 g, reduction in the weight of the pups was noticed in 1:1 ratio (25.41±1.47g). Noticeable reduction in the weight of pups was in 1:2 ratio (24.73±0.81g) and further reduction was noticed in 1:3 ratios (22.52±0.47g). A significant
reduction in the weight of the pups was observed in only fish meal fed rats (20.93±0.38g) compared with that of control. No significant difference was seen weight of the pups on day 21 between 1:1 and 1:2 (p= 0.649). (Table: 24).