C. EFFECT OF PITAVASTAIN (PTV) IN MSG OBESE MALE WISTAR RATS

I. ANTHROPOMETRIC PARAMETERS

1. Effect of PTV on body weight in MSG obese Wistar rats

In Figure 25, the weight gain in MSG obese and normal control rats over the course of the study period is displayed. The body weight of rats in the PTV (in doses of 0.5 & 3 mg/kg i.e. Groups XXIV & XXV respectively, p.o.) as well as orlistat (10 mg/kg i.e. Group XXVI, p.o.) were equivalent at the start of the study, as expected from the random assignment of rats to each group. MSG obese rats (i.e. Group XXIII) showed significant decrease in body weight as compared to normal control rats (i.e. Group XXII) (27.02%) ($P < 0.01$). Further, PTV (3 mg/kg i.e. Group XXV) and orlistat (10 mg/kg i.e. Group XXVI, p.o.) showed a significant decrease in body weight as compared to MSG obese rats (i.e. Group XXIII) during the treatment period of week 2 to week 4 (25.94% & 32.71% respectively) ($P < 0.05$).

2. Effect of PTV on naso-anal length in MSG obese Wistar rats

The naso-anal length values are shown in the Figure 26. The naso-anal length was significantly decreased in MSG obese rats (i.e. Group XXIII) as compared to normal control rats (i.e. Group XXII) (13.95%) ($P < 0.05$). However, no significant difference was found in naso-anal length among PTV (in doses of 0.5 & 3 mg/kg i.e. Groups XXIV & XXV respectively, p.o.) and orlistat (10 mg/kg i.e. Group XXVI, p.o.) treated rats, when compared with MSG obese rats (i.e. Group XXIII) ($P > 0.05$).

3. Effect of PTV on Lee index in MSG obese Wistar rats

The data of Lee index is depicted in Figure 27. MSG obese rats (i.e. Group XXIII) showed a significant increase in Lee index as compared to normal control rats (i.e. Group XXII) (12.44%) ($P < 0.01$). Treatment with PTV (in doses of 0.5 & 3 mg/kg i.e. Groups XXIV & XXV respectively, p.o.) and orlistat (10 mg/kg i.e. Group XXVI, p.o.) produced significant reduction in Lee index as compared to MSG obese rats (i.e. Group XXIII) (4.01% & 4.78%; 5.35% respectively) ($P < 0.01$).

4. Effect of PTV on food intake in MSG obese Wistar rats

There was no significant ($P > 0.05$) difference among all the groups in daily food intake during the whole experimental period (Table 32).
II. VISCERAL FAT PAD WEIGHTS

1. Effect of PTV on epididymal fat pad weight in MSG obese Wistar rats

Figure 28 indicates the effect of PTV on epididymal fat pad weight in MSG obese Wistar rats. The epididymal fat pad weight were significantly increased in MSG obese rats (i.e. Group XXIII) as compared to normal control rats (i.e. Group XXII) (150%) \((P < 0.01)\). The PTV (in doses of 0.5 & 3 mg/kg i.e. Groups XXIV & XXV respectively, p.o.) as well as orlistat (10 mg/kg i.e. Group XXVI, p.o.) treated rats showed significant decrease in epididymal fat pad weight as compared to MSG obese rats (i.e. Group XXIII) (61.50% & 67%; 67.50% respectively) \((P < 0.01)\).

2. Effect of PTV on retroperitoneal fat pad weight in MSG obese Wistar rats

Figure 28 indicates the effect of PTV on retroperitoneal fat pad weight in MSG obese Wistar rats. The retroperitoneal fat pad weight were increased in MSG obese rats (i.e. Group XXIII) as compared to normal control rats (i.e. Group XXII) (150%) \((P < 0.01)\). The PTV (in doses of 0.5 & 3 mg/kg i.e. Groups XXIV & XXV respectively, p.o.) as well as orlistat (10 mg/kg i.e. Group XXVI, p.o.) treated rats showed significant decrease in retroperitoneal fat pad weight as compared to MSG obese rats (i.e. Group XXIII) (62.50% & 69.16%; 70% respectively) \((P < 0.01)\).

III. ORGANS’ WEIGHT

1. Effect of PTV on liver weight in MSG obese Wistar rats

The effect of PTV treatment on liver weight in MSG obese rats (i.e. Group XXIII) is shown in Table 33. MSG obese rats (i.e. Group XXIII) showed a significant decrease in liver weight as compared to normal control rats (i.e. Group XXII) (14.28%) \((P < 0.05)\). There was no significant \((P > 0.05)\) difference in liver weight in PTV (in doses of 0.5 & 3 mg/kg i.e. Groups XXIV & XXV respectively, p.o.) as well as orlistat (10 mg/kg i.e. Group XXVI, p.o.) treated rats as compared to MSG obese rats (i.e. Group XXIII).

2. Effect of PTV on heart weight in MSG obese Wistar rats

The effect of PTV treatment on heart weight in MSG obese rats (i.e. Group XXIII) is shown in Table 33. MSG obese rats (i.e. Group XXIII) showed no change in heart weight as compared to normal control rats (i.e. Group XXII) \((P < 0.05)\). There was no
significant ($P > 0.05$) difference in heart weight in PTV (in doses of 0.5 & 3 mg/kg i.e. Groups XXIV & XXV respectively, p.o.) as well as orlistat (10 mg/kg i.e. Group XXVI, p.o.) treated rats as compared to MSG obese rats (i.e. Group XXIII).

IV. SERUM BIOCHEMICAL PARAMETERS

1. Effect of PTV on serum leptin in MSG obese Wistar rats

Table 34 presents the data for a number of biochemical parameters. The level of serum leptin was significantly increased in MSG obese rats (i.e. Group XXIII) as compared to normal control rats (i.e. Group XXII) (181.42% ($P < 0.01$)). PTV (in doses of 0.5 & 3 mg/kg i.e. Groups XXIV & XXV respectively, p.o.) as well as orlistat (10 mg/kg i.e. Group XXVI, p.o.) produced significant decrease in the levels of serum leptin as compared to MSG obese rats (i.e. Group XXIII) (57.36% & 66.19%; 66.49% respectively) ($P < 0.01$).

2. Effect of PTV on serum insulin in MSG obese Wistar rats

As shown in Table 34, the level of serum insulin was increased by 71.20% in MSG obese rats (i.e. Group XXIII) as compared to normal control rats (i.e. Group XXII) ($P < 0.01$). PTV (in doses of 0.5 & 3 mg/kg i.e. Groups XXIV & XXV respectively, p.o.) as well as orlistat (10 mg/kg i.e. Group XXVI, p.o.) showed significant reduction in levels of serum insulin as compared to MSG obese rats (i.e. Group XXIII) (28.46% & 47.49%; 50.77% respectively) ($P < 0.01$).

3. Effect of PTV on blood glucose in MSG obese Wistar rats

The level of blood glucose was significantly increased by 30.56% in MSG obese rats (i.e. Group XXIII) as compared to normal control rats (i.e. Group XXII) ($P < 0.01$). The treatment with PTV (in doses of 0.5 & 3 mg/kg i.e. Groups XXIV & XXV respectively, p.o.) as well as orlistat (10 mg/kg i.e. Group XXVI, p.o.) showed significant decrease in levels of blood glucose as compared to MSG obese rats (i.e. Group XXIII) ($P < 0.01$) (21.18% & 28.76%; 28.92% respectively) (Table 34).

4. Effect of PTV on HOMA-IR index in MSG obese Wistar rats

The levels of HOMA-IR index was significantly increased in MSG obese rats (i.e. Group XXIII) as compared to normal control rats (i.e. Group XXII) (123.52%) ($P < 0.01$). PTV (in doses of 0.5 & 3 mg/kg i.e. Groups XXIV & XXV respectively, p.o.) as well as orlistat (10 mg/kg i.e. Group XXVI, p.o.) showed significant decrease in
the levels of HOMA-IR index as compared to MSG obese rats (i.e. Group XXIII) \( (P < 0.01) \) (43.62% & 62.60%; 65.01% respectively) (Table 34).

5. **Effect of PTV on serum total cholesterol (TC) in MSG obese rats**

Effect of PTV on lipid profile in MSG obese Wistar rats is given in Figure 29. MSG obese rats (i.e. Group XXIII) showed significant increase in levels of serum TC as compared to normal control rats (i.e. Group XXII) \( (33.58\%) \) \( (P < 0.01) \). There was significant reduction in the levels of serum TC by PTV \((0.5 \& 3 \text{ mg/kg i.e. Groups XXIV & XXV respectively, p.o.})\) as well as orlistat \((10 \text{ mg/kg i.e. Group XXVI, p.o.})\) treatments when compared with MSG obese rats (i.e. Group XXIII) respectively \( (P < 0.01) \) (16.96% & 33.57%; and 34.81% respectively) (Figure 29).

6. **Effect of PTV on serum triglycerides (TGs) in MSG obese rats**

Effect of PTV on TGs in MSG obese Wistar rats is given in Figure 29. MSG obese rats (i.e. Group XXIII) showed significant increase \( (101.06\%) \) in levels of serum TGs as compared to normal control rats (i.e. Group XXII) \( (P < 0.01) \). There was significant reduction in the levels of serum TGs by PTV \((0.5 \& 3 \text{ mg/kg i.e. Groups XXIV & XXV respectively, p.o.})\) as well as orlistat \((10 \text{ mg/kg i.e. Group XXVI, p.o.})\) treatments when compared with MSG obese rats (i.e. Group XXIII) respectively \( (P < 0.01) \) (49.76% & 57.72%; and 59.58% respectively) (Figure 29).

7. **Effect of PTV on serum HDL in MSG obese rats**

Effect of PTV on HDL in MSG obese Wistar rats is given in Figure 29. MSG obese rats (i.e. Group XXIII) showed significant decrease \( (27.36\%) \) in serum HDL-C levels as compared to normal control rats (i.e. Group XXII) \( (P < 0.01) \). There was significant elevation in HDL-C levels by PTV \((0.5 \& 3 \text{ mg/kg i.e. Groups XXIV & XXV respectively, p.o.})\) as well as orlistat \((10 \text{ mg/kg i.e. Group XXVI, p.o.})\) treatments when compared with MSG obese rats (i.e. Group XXIII) \( (37.68\% \& 58.37\%; \text{ and } 65.14\% \text{ respectively}) \) \( (P < 0.01) \) (Figure 29).

8. **Effect of PTV on serum LDL-C levels in MSG obese rats**

The level of LDL-C was significantly increased in MSG obese rats (i.e. Group XXIII) as compared to normal control rats (i.e. Group XXII) \( (59.62\%) \) \( (P < 0.01) \). There was significant reduction by PTV \((0.5 \& 3 \text{ mg/kg i.e. Groups XXIV & XXV respectively, p.o.})\) as well as orlistat \((10 \text{ mg/kg i.e. Group XXVI, p.o.})\) treatments in LDL-C as
compared to MSG obese rats (i.e. Group XXIII) (22% & 57.86%; and 61.98% respectively) (Table 35).

9. Effect of PTV on serum VLDL-C levels in MSG obese rats

The level of VLDL-C was significantly increased in MSG obese rats (i.e. Group XXIII) as compared to normal control rats (i.e. Group XXII) (101.06%) \((P < 0.01)\). There was significant reduction by PTV (0.5 & 3 mg/kg i.e. Groups XXIV & XXV respectively, p.o.) as well as orlistat (10 mg/kg i.e. Group XXVI, p.o.) in VLDL-C as compared to MSG obese rats (i.e. Group XXIII) (49.76% & 57.72%; and 59.58% respectively) (Table 35).

10. Effect of PTV on atherogenic risk predictor indices in MSG obese rats

10.1 Effect of PTV on coronary risk index (CRI; TC/HDL-C) in MSG obese rats

The level of coronary risk index (CRI; TC/HDL-C) was significantly increased in MSG obese rats (i.e. Group XXIII) as compared to normal control rats (i.e. Group XXII) respectively (83.93%) \((P < 0.01)\). There was significant reduction by PTV (0.5 & 3 mg/kg i.e. Groups XXIV & XXV respectively, p.o.) as well as orlistat (10 mg/kg i.e. Group XXVI, p.o.) in coronary risk index (TC/HDL-C) as compared to MSG obese rats (i.e. Group XXIII) (39.69% & 58.05%; and 60.52% respectively) (Table 35).

10.2 Effect of PTV on atherogenic risk predictor (ARP; LDL-C/HDL-C) in MSG obese rats

The level of atherogenic risk predictor (ARP; LDL-C/HDL-C) was significantly increased in MSG obese rats (i.e. Group XXIII) as compared to normal control rats (i.e. Group XXII) (119.77%) \((P < 0.01)\). There was significant reduction by PTV (0.5 & 3 mg/kg i.e. Groups XXIV & XXV respectively, p.o.) as well as orlistat (10 mg/kg i.e. Group XXVI, p.o.) in atherogenic risk predictor (LDL-C/HDL-C) as compared to MSG obese rats (i.e. Group XXIII) (43.35% & 73.39%; and 76.97% respectively) (Table 35).