

## GLUCOSE TOLERANCE TEST AND SERUM TRIGLYCERIDES LEVELS AFTER SIX MONTHS TREATMENT WITH MEGESTROL ACETATE

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The use of the synthetic steroids oral contraceptive (OC) has provided women with an efficient means for preventing pregnancy, but on occasions its use has been associated with potentially adverse effects in lipid and carbohydrate metabolisms (Spellacy, 1967). Several investigations have been made to improve these contraceptive agents by studies with the individual steroids to describe the effect of each one. As another generation of the oral contraceptives are being developed where progesterone alone is to be administered continuously for pregnancy prevention, an opportunity is provided for detailed study of steroid contraceptive and metabolic effects. The purpose of this work is to study the effect of megestrol acetate on lipid and carbohydrate metabolism.

### Material and Methods

Twenty-five female volunteers were selected for this study. They were at least 4 weeks postpartum and had not

taken any steroids atleast for 3 months. All were instructed to eat high carbohydrate diet (250 gms.) for 3 days before testing. Heights and weights were measured and they were questioned about other drugs being used, past obstetric history and family history of diabetes mellitus. After over night fast venous blood sample was drawn after giving 100 gm. of glucose at 0.30', 1 hr., 2 hrs. and 3 hrs. Blood sugar and triglycerides 12 levels were measured colorimetrically by Nelson (1944) and Somogyl (1945) methods.

After completion of the test, the women were given the (0.5 mg) tablet and instructed to take one tablet every day. They were seen frequently and then brought back to the laboratory for an identical repeat beat after taking the drugs for 6 months.

### Results

The mean age of the subjects was  $24.0 \pm 0.9$  years. The mean weight before and after the 6 months treatment was 45.5 Kg. and 47.5 Kg. respectively and was statistically significant ( $t = 2.56$  and  $p 0.05$ ). Glucose tolerance tests are shown in Table I and the mean values are plotted in Fig. 1.

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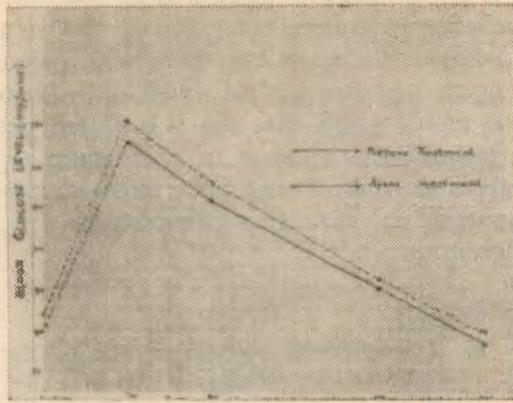


Fig. 1  
Glucose Tolerance test in 25 women before and after 6 months treatment with megestrol acetate (M.A.) 0.5 MG per day.

the carbohydrate and lipid metabolic alterations in women using the oral contraceptive has been recently completed and this suggests that each steroid must be individually assessed (Spellacy, 1967).

There are only a few studies of carbohydrate metabolism in women using an oral contraceptive which contains megestrol acetate (M.A.) and they observed no alteration in carbohydrate metabolism when megestrol acetate was taken with combination with ethinyl estradiol or mestranol (Spellacy, 1967). More recent studies with ethinyl estradiol or mestranol have demonstrated

TABLE I  
Glucose Tolerance Test in 25 Women before and after 6 Months of Treatment with Megestrol Acetate (MA) 0.5 MG/Day

	Before Treatment					After Treatment				
	Fasting	30	60	120	180	Fasting	30	60	120	180
Mean	81.6	127.3	113.3	90.2	77.6	86.2	132.3	117.2	92.3	79.6
S.D.	6.9	24.1	18.9	16.2	14.2	7.3	26.4	17.9	18.6	17.2
P	NS	NS	NS	NS	NS					

There was no significant change at any level.

The mean fasting plasma triglyceride level before and after 6 months treatment was  $48.8 \pm 3.2$  mg. per cent and  $49.8 \pm 3.2$  respectively and there was no significant change (p 0.5).

Discussion

Considerable literature has accumulated during the past 16 years on the experience of using synthetic steroids for fertility control. The problems of occasional undesirable side effects have plagued researchers and promoted the continuing search for newer and better means of contraception. A review of

that they do not alter carbohydrate metabolism either (Spellacy *et al* 1972). Thus, it seemed essential to study the progestogen M.A. alone since these other data suggested that it would be free from adverse metabolic effects. The preliminary data and these results with megestrol acetate are encouraging (Spellacy, 1972). There was no major change in glucose tolerance and plasma triglycerides concentration. These data suggest that this steroid might be utilized for contraceptive purposes without changes in carbohydrate and lipid metabolisms. Similar findings have also been observed by other workers (Adams and Wynn, 1972).

There are other important implications in these results. Since MA is a substituted progesterone type progestogen, these data support the theory that the major carbohydrate abnormalities seen in oral contraceptive users may be related to the 19 nortestosterone type progestogens (Spellacy *et al* 1972-73). This is further supported by studies demonstrating the minimum carbohydrate effects of the oral contraceptive estrogens when they are administered alone (Spellacy *et al* 1972). Finally, Rose and Adams (1972) have recently shown that tryptophan metabolism is unaltered in women using MA, and our results also support the suggestion that tryptophan metabolism alteration and the production of excessive amounts of xanthurenic acid might be involved in the carbohydrate metabolic changes found in some oral contraceptive users (Rose and Adams, 1972; Spellacy *et al* 1972). Further studies of this and other progestogens are necessary to support these theories. Such studies may provide physicians with new effective and yet safer contraceptives.

#### Summary

Glucose tolerance test and plasma triglycerides levels were studied in 25 women before and after treatment with megestrol 0.5 mg per day for 6 months.

It was found that there was no significant change in glucose tolerance as well as in triglyceride levels but there was a significant increase in body weight by 2 kg. It is suggested that the substituted progesterone progestine in oral contraceptives exert little metabolic effect as compared to the 19-norprogesterone progestins.

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