cal treatment with gravid conjugate showed a more granular, diffuse reaction. This suggests a difference in egg antigen composition or concentration, as development proceeds.

Conclusions. In this study, the variety of structures on which localization occurred reveals the extreme complexity of antigen-antibody systems present. Structures particularly manifesting a difference in antigenic protein content are the cuticle and eggs. Exhaustive serum absorption studies in conjunction with antigen separation may elucidate the number and specific location of common and unique antigens involved. To summarize, general antigenic differences in the strobila of *Moniezia expansa* were noted, by an immunologic monitor of development.

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Weight changes in mice after intrauterine treatment with MPG (2-mercaptopropionylglycine) against I^{131} irradiation

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Summary. MPG, administered in utero against I^{131}-irradiation, protected young mice to some extent from loss of body weight at different postnatal intervals. Increase in the tissue weight induced by the internal emitter was enhanced at 6 weeks of age by the drug.

MPG (2-mercaptopropionylglycine) has been shown to be a radioprotector effective at a very low dose (20 mg/kg b.wt) in mice[2]. A number of reports from this laboratory provide further evidence to its protective role[3,4]. Of late, Uma Devi and Jagetia[5] have shown that MPG protects mice by lowering the thyroid metabolic rate. Thyroid function is increased during pregnancy[6]. It was, therefore, thought worthwhile to study the radioprotective effect of MPG on the development of mice where the mother's thyroid had been suppressed by irradiation with internally administered I^{131}.

Material and methods. 10 female mice at day 11.5 of pregnancy (considering that mating took place after midnight and treatment was done on the following day at 14.00–15.00 h) were injected i.p. with a single dose of 150 µCi I^{131} per animal to serve as the control group. Another 10 mice of the same pregnancy received MPG (dissolved in double distilled water, with the pH adjusted to 6.4 with the addition of 0.1 N NaOH solution; each pregnant animal received 0.5 mg MPG in 0.25 ml solution) i.p. at the rate of 20 mg/kg b.wt, 30 min before, in addition to the same dose of I^{131}, to serve as the experimental group. The latter group of animals received the same dose of MPG daily, on all the subsequent gestation days till parturition. The normal group consisted of pregnant mothers similarly treated with double distilled water.

All the 3 groups were allowed to breed. The body weight of at least 2 animals from each sex for each litter was recorded from the day of birth to 6 weeks of age, at weekly intervals. Abnormalities, if any, in litters were also noted. At the age of 6 weeks, at least 1 male and 1 female from each litter were sacrificed and the wet weights of various tissues like liver, spleen, thymus, testes, pituitary, brain and kidney were recorded.

Results. All the female bred normally with the completion of term (19 days under these laboratory conditions). The offspring of the control group were lethargic throughout their postnatal development. The hind limbs of control animals were extremely weak as compared to the experimental ones (fig. 1). No death was recorded up to 6 weeks of age.

The body weights of both males and females were consistently less, except at 3 weeks old, in both control and experimental groups when compared to the normal. But the experimental group showed values which were closer to the normal values (fig. 2).

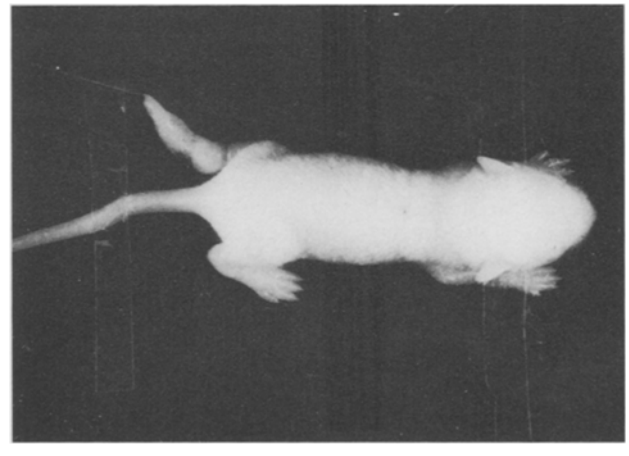

Figure 1. 2-week-old control mice (I^{131}-treated in utero) showing weak hind limbs and inflamed toes.

The wet weights of some tissues, like testes, spleen, thymus and liver were higher in the experimental group, as compared to the control values in both sexes, but the control value itself was higher than the normal one. In other tissues (pituitary, brain and kidney), the increase in weight of the tissues in control and experimental group was not obvious (fig. 3).

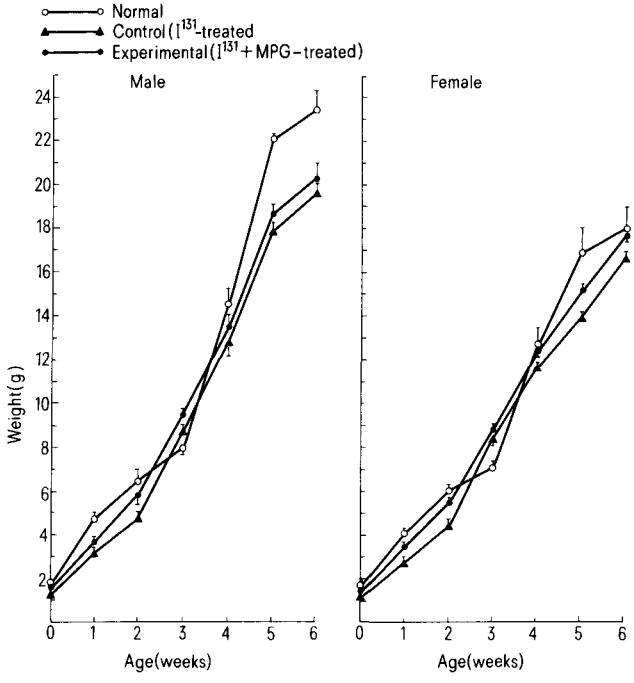

Figure 2. Body weight changes in mice from the day of birth to 6 weeks old, after I^{131}- or I^{131} + MPG-treatment in utero.

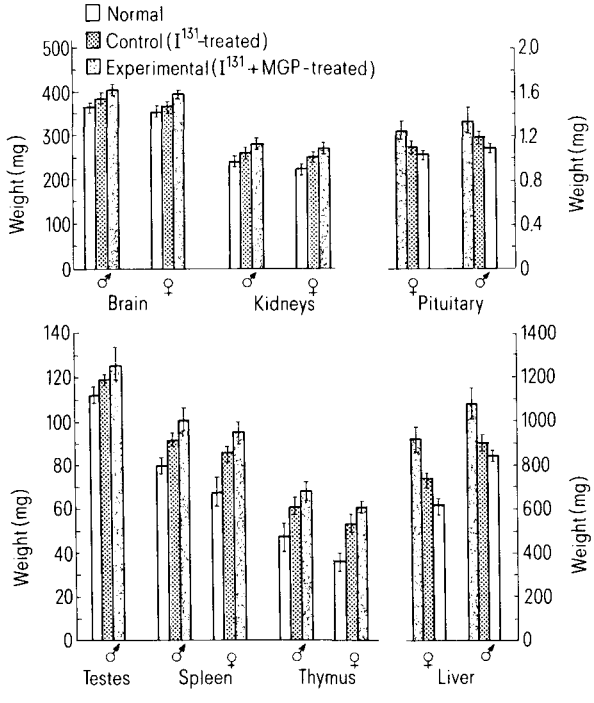

Figure 3. Tissue weight changes in 6-week-old mice after I^{131}- or I^{131} + MPG-treatment.

Discussion. Loss of body weight in litters after external irradiation has been observed by Wilson and Karr[7], Nash and Gowen[8] and Russell[9]. The stage maximally susceptible to growth retardation in response to the dose-weight relationship has been described as day 11.5 of pregnancy[10]. The present finding on the body weight after the administration of thyroid seeking radionuclide revealed that although the experimental value was always less (except at 3 weeks) as compared to the normal, it was always higher than the control one, showing a positive protection by MPG. The surprising increase in the weight in control and experimental animals at 3 weeks post-partum may be because of the fact that by about 2 weeks of age the young ones started weaning; before this they depended entirely on the mother's milk (which was heavily irradiated). After the young ones started weaning, food intake might have given a boost to their body weights. Moreover, the endocrine glands start functioning from 2 weeks in an interplay way. This also might have been a contributing factor. But after a short phase of increase, the weight again fell because of the heavy damage the animal had suffered during fetal life with thyroid function heavily suppressed in the mother.

The weights of different tissues in the experimental group at 6 weeks post-partum in both the sexes is higher than the control ones. Interestingly, the value for the control is also higher as compared to normal. Saini and Uma Devi[3] reported that the MPG partially protected the spleen against weight loss due to radiation and exaggereated the compensatory reaction in the tissue during recovery. It can be considered that the higher values in control and experimental groups may be due to a compensatory reaction in the tissue during recovery. It is clear from the data that, broadly speaking, the radiosensitive tissues with more mitotic activity have a clearer increase in weight than the radioresistant ones. Saharan and Uma Devi[4] also reported a similar protective role of MPG against weight loss in testes after irradiation.

Since the body weight was less but the soft tissue weight was more (in control as well as experimental animals) as compared to the normal, it appears that weak skeletal development was responsible for the loss in body weight. The weakness of the skeleton was substantiated by the observation that the control animals, in general, had extremely weak hind limbs and they remained almost immobile until the age of 6 weeks. The experimental animals were, however, partially protected by MPG. In a similar experiment, a single dose of MPG was administered to the mother before I^{131}-injection (unpublished)[11]. The repeated injection was initiated because of continuous internal irradiation to the mother's thyroid; but to the authors, the net result did not seem to be different from that when a single dose of MPG was administered.

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