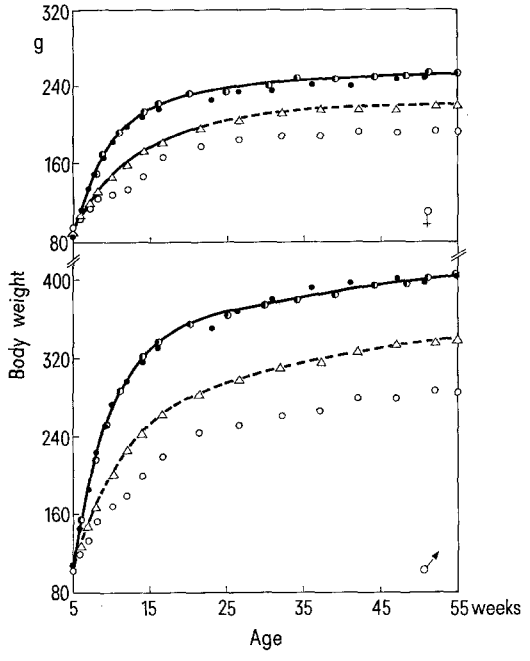
Results. The IUdR treatment alone did not appear to interfere with the growth of the animals (Figure) or to induce tumor development (Table). However, the injections of IUdR did increase markedly the short-term lethal effects of X-radiation (Table); there was also a marked interference with the growth of the surviving animals after the exposure to both agents together (Figure). The radiosensitization of the whole animal by IUdR is thus in agreement with the effects of IUdR on isolated mammalian cells[1-3]. However, IUdR failed to increase the incidence of tumors elicited by X-radiation (Table).



Effect of X-radiation and of IUdR on the mean body weight of female (top graph) and male (bottom graph) rats. Treatments were A) control (◐–◐); B) IUdR alone (●); C) X-radiation alone (△ – △); D) IUdR plus X-radiation (○).

It is possible that different schedules of IUdR treatment might stimulate skin tumor production by X-radiation, in the same manner as demonstrated in mice when using local applications of methylcholanthrene[5]. However, the present data show that incorporation of sufficient IUdR into the DNA of the animal to increase appreciably the lethal effects of X-irradiation did not augment the total carcinogenic effects of whole-body radiation among the surviving animals. These results differ from those obtained when ionizing radiation was combined with other carcinogenic agents such as urethane or fluorenylenebisacetamide, in which case the pattern of tumor development was altered markedly[7,8]. The difference may reflect the fact that IUdR is selectively incorporated into the DNA of only those cells which are actively synthesizing DNA at the time of injection.

Zusammenfassung. Nach Injektion von Jod-Desoxyuridin bei Ratten hat die letale Wirkung von Ganzkörper-Röntgenbestrahlungen zugenommen ohne die Anzahl der entstandenen Tumoren zu vermehren.

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Effects of Ether Anesthesia on Plasma Prolactin Sampling

There is considerable evidence to indicate that the stress of etherization in rats causes a rapid increase in serum prolactin[1-6]. GROSVENOR et al.[1] showed that laparotomy under ether depleted pituitary prolactin as effectively as nursing. NEILL[2] has reported increases in serum prolactin following the 'stress' of ether anesthesia. More recently, TERKEL et al.[3] and AJIKA et al.[4,5] have demonstrated elevated serum prolactin levels following 2 min of etherization. NEILL[2,6] has warned that considerable care should be taken in animal handling and in selecting a method of blood collection when assaying blood for prolactin.

In this study an intra-atrial cannula was used to withdraw blood which was subsequently assayed for prolactin by radioimmunoassay. This method of blood collection markedly facilitated the evaluation of the relationship of ether 'stress' and blood prolactin levels. It has also provided insight into the optimal time period from which a 'normal' sample can be safely withdrawn for prolactin analysis in rats under ether anesthesia.

Materials and methods. 17 60-day-old male Sprague-Dawley rats from Spartan Animal Farms, Inc., (Haslett, MI) weighing 275–325 g were used. The rats were housed in a room maintained at 24 °C which was illuminated 14 h/day. They were fed a standard laboratory chow (Allied Mills, Chicago, Ill.) and water ad libitum. After installation of cannulas, the rats were housed in separate cages for the remainder of the experiment.

In rats anesthetized with Nembutal (35 mg/kg body weight), a silicone rubber (Silastic) cannula was passed down the right external jugular vein into the right side of the heart as described by TERKEL[7] and WEEKS[8]. The intravascular portion of the cannula consisted of 0.012 inch (i.d.), 0.025 inch (o.d.) Medical Silastic (Dow-Corning, Midland, MI) tubing connected to PE-60 polyethylene tubing (Clay-Adams, Inc., N.Y., NY) joined with a silicone seal (General Electric Co., Silicone Products Dept., Waterford, N.Y.). The cannulas were exteriorized and fastened at the back of the neck, filled with heparinized saline (300 U/ml), and sealed by inserting a straight pin into the end of the cannula.

The rats were placed in a container saturated with ether (ether for anesthesia, Mallinckrodt, St. Louis, MO) at

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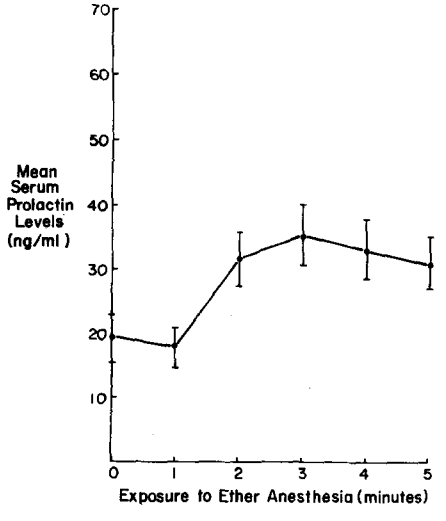
time 0 for 30 sec and thereafter exposed to an ether saturated nose-cone for the remainder of the blood collection period. Prior to placing the rat into the etherized container, caution was taken not to disturb the cage or rat in any manner. Blood was collected in 0.5 ml samples at 1, 2, 3, 4 and 5 min of exposure to ether. A separate 1 ml glass syringe fitted with a 21-gauge needle was used to withdraw blood from the cannula for each sample. After each blood sample, the cannula was filled with heparinized saline (0.06 ml, cannula volume). The total amount of blood withdrawn from the cannula of each rat was 2.5 ml. 24 h after taking the last blood sample, the animal was decapitated to obtain a basal (time 0) blood sample. Blood was allowed to sit overnight at 4 °C and the serum collected the following morning. Serum was frozen at −20 °C until assayed for immunoreactive prolactin by the method of NISWENDER et. al[9]. The significance of differences between mean serum prolactin levels was calculated by Student's *t*-test.

Results and discussion. Mean serum prolactin level was 19.0 ± 3.7 ng/ml at time 0. After exposure to ether for 1 min, serum prolactin values were 17.8 ± 3.3 ng/ml, a value not significantly different from time 0. Following 2 min of ether, the mean prolactin level showed an approximate 2-fold increase, to 35.6 ± 4.8 ng/ml ($p < 0.001$) and remained at a high level throughout the 5 min sampling period (Figure). Every rat, without exception, showed an increase in serum prolactin at 2 min of etherization, when compared with prolactin values at times 0 or 1 min.



The effect of continuous ether stress on immunoreactive serum prolactin levels. Animals were placed in an etherized container for 30 sec and exposed to an ether saturated nose cone for the remainder of the 5 min etherization. Each point represents the mean of 16–18 values. The '0' time represents 6 decapitation values. The vertical bars represent ± 1 standard error.

Other laboratories have demonstrated[2–6,10] an ether anesthesia-induced rise in rat serum prolactin, but the critical time in which this rise takes place was not the objective of these studies, consequently it has not been adequately evaluated. The results of this study, in which an intra-atrial cannula was implanted into male rats for blood collection, show that this rise occurs within 1 to 2 min of ether exposure. These are in accord with the study of TERKEL et al.[3] who reported a rise in serum prolactin in lactating rats after 1–2 min of ether exposure and WUTTKE and MEITES[11] who found no change in serum prolactin in normal female rats after $^1/_2$ min of etherization. Thus, if the blood sample can be drawn in the first min of etherization, a valid level of prolactin can be obtained. Such a practice should eliminate, at least in part, the well acknowledged intra-group deviation of serum prolactin values reported by us[12–15] and numerous other laboratories.

Zusammenfassung. Bei männlichen Ratten wurde das «Timing» der Prolactin-Stressreaktion gemessen und festgestellt, dass die Prolactin-Konzentration invariabel nach 2 min Äther-Stress ansteigt.

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Thyroxine Formation by Fish Kidney Soluble Supernatant of *Anabas testudineus*

It has recently been reported from this laboratory[1] that head kidney soluble fraction (105,000 × *g* supernatant) from a teleostean fish demonstrated significant peroxidase activity, and this peroxidase could oxidise the iodide into tri-iodide, a property which is met in connection with the thyroid peroxidase[2,3]. That head kidney of teleost may possess thyroidal activity is again supported by the observation of large concentration of thyroid follicles in this area[4–8]. More clear cut evidence in this

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