DEMONSTRATIONS

Kininogen levels in rat pseudopregnancy

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Recent studies in this laboratory have shown that plasma kininogen levels rise with advancing gestation in the rat and these levels are affected by the circulating level of oestrogens in the female rat (McCormick & Senior, 1971). The present investigation is being performed to determine the effect of pseudopregnancy on the rat kininogen levels.

Mature, virgin female rats of the CSE strain are used and the stage of the oestrous cycle is determined by vaginal smear. When the vaginal smear is fully cornified the female rats are allowed to mate with a vasectomized male rat and the day of sterile mating is taken as day 0 of pseudopregnancy. To prolong pseudopregnancy the uterus is traumatized on day 5, the pseudopregnancy then lasts for a further 23 days. The concentration of plasma kininogen is determined using a modified method of Diniz & Carvalho (1963).

The results indicate that from day 17 of pseudopregnancy onwards there is an increase in plasma kininogen concentration, which follows a similar pattern to that found in the pregnant rat. These results support the suggestion that circulating oestrogen levels are important in the maintenance of plasma kininogen levels in the female rat and that this factor is independent of the presence of the foetus during gestation.

REFERENCES

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The retention of some metallic elements in tissues of rats exposed to welding fumes

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Groups of 8–12 rats were placed in a closed chamber and exposed to fumes from an arc welding process for periods up to 4 h. Fumes were produced by igniting standard rutile iron welding rods (Phillips Type C18) on a workpiece of medium tensile steel housed in a specially constructed cowl. The fumes, comprising decomposition products, e.g. metallic oxides, from the welding rods and workpiece were drawn through a centrally placed perforated tube in the exposure chamber. Samples of the fume material were collected and the flow rate measured. Twenty-four h later, or after periods of 7, 27 or 75 days, the animals were killed and tissue samples subjected to histological examination, or neutron activation analysis to determine the content of metallic elements.

Twenty-four h after exposure, substantial deposition of particulate material was apparent in lung tissue. Macrophages in lower bronchioles and alveolar ducts

were engorged with iron-containing particles. Subsequently free particulate material disappeared from the lungs, but particle-containing macrophages were still present after 75 days. Initially there were minor inflammatory changes in lung tissue, with slight peribronchial oedema and epithelial thickening. Welding fume material was also observed in the gastrointestinal tract.

Concentrations of elements present in the welding fumes, such as iron, cobalt, chromium and antimony, were significantly increased in lung tissue. Concentrations of iron in lung tissue decreased slowly over 75 days, but cobalt, chromium and antimony concentrations decreased more rapidly, probably by elution from retained particles. Cobalt levels in liver tissue were significantly increased after 24 h. These results suggest the possibility that tissues in the vicinity of inhaled welding fume deposits may be exposed to high local concentrations of some toxic elements. This may be of interest in relation to the aetiology of respiratory distress experienced by workers exposed occupationally to welding fumes.

Toxicological evaluation of surgical dressings

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The widespread use of plastic materials in medical and veterinary practice has necessitated the development of some methods for evaluating their safety in use. One such use of these substances is in the adhesive coating of new types of non-woven surgical dressing products with polymeric substances. Such additives and other materials added to aid fluid absorbtion could, if transferred from fabric to patient, give rise to adverse effects. A method has been developed whereby the extractable compounds are eluted from the fabric sample under reproducible extraction conditions and subjected to chemical analysis and animal toxicological studies. The extraction method will be demonstrated and consists basically of a syringe barrel fitted into a constant temperature water bath ; the compressed air ram which operates the piston exerts a pressure on the fabric saturated with a fixed volume of solvent. The resulting extract is collected and examined using suitable test systems.

The effect of experimental conditions on total urinary catecholamine excretion in the rat

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Measurements of urinary catecholamine levels have frequently been used as a measure of sympathetic nervous activity in experimental animals. The metabolites of these substances are, however, excreted in much greater quantities ; the major metabolite in rats, hydroxymethoxyphenylglycol (H.M.P.G.) constitutes approximately 80% of the total excretion of catecholamines and metabolites (Ceasar, Ruthven & Sandler, 1969 ; Shum, Johnson & Flattery, 1971). In both of these studies urine was collected from male Wistar rats, in the former case maintained isolated and fasted, whilst in the latter case groups of four animals were used.