cated DNA which were responsible for the reduction of the template activity. The average molecular weight of sonicated DNA was determined from sedimentation profiles in neutral sucrose gradients. The molecular weight of DNA markedly decreased by sonication for periods up to 2 min, and levelled off for longer periods than 2 min.

The alkaline sucrose gradient analysis showed the linear increase of single strand breaks in sonicated DNA with increasing sonication time. The template activity of sonicated DNA decreased with an exponential dependence on the number of single strand breaks, as seen in the curve of the template activity vs the number of single strand breaks. The increase in absorbance at 260 nm of sonicated DNA was observed when DNA was sonicated at high acoustic powers for a long period, indicating that the rupture of hydrogen bonds in base pairs of DNA was caused by sonication. Free radicals as measured by Fricke Dosimeter were produced linearly with the sonication time.

These results suggest that the reduction of the template activity of DNA for a short period of sonication was mainly due to the double strand breaks in DNA which were produced by the mechanical effects of ultrasound, and that the single strand breaks in DNA produced by the chemical effects of ultrasound caused the decrease in the template activity of DNA for longer periods of sonication.

THE EFFECT OF MERCURY COMPOUNDS ON THE RELEASE OF NORADRENALINE FROM GUINEA-PIG VAS DEFERENS

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The present experiment was carried out to investigate the effect of mercury compounds on the spontaneous and evoked release of noradrenaline from isolated guinea-pig vas deferens.

1) Methylmercuric chloride (MMC, 25 μM$\sim$0.2 mM), p-chloromercuriphenyl sulfonate (PCMBS, 0.25 mM$\sim$1 mM) and mercuric chloride ($HgCl_2$, 50 μM$\sim$0.2 mM) were found to be effective in increasing the noradrenaline output in a concentration dependent manner. The effect of MMC and $HgCl_2$ did not depend on extracellular calcium, but the response to PCMBS was reduced in the absence of extracellular calcium. Thiol, such as cysteine and penicillamine, reversibly inhibited the effect of mercury compounds, when added simultaneously with them in equal or twofold concentration.

2) MMC (50 μM) had apparently no effect on the noradrenaline output induced by transmural electrical stimulation (TMS) and excess potassium (excess K). PCMBS (0.1 mM, 0.5 mM) reduced the response to TMS, but apparently potentiated the response to excess K at 0.5 mM. $HgCl_2$ (25 μM) significantly, but reversibly inhibited the noradrenaline output induced by both stimulation.

3) There was no apparent change in both the spontaneous and evoked noradrenaline output from vas deferens isolated from guinea-pigs 1 hr after subcutaneous injection of MMC in a single dose of 10 mg/kg or after the injection at a daily dosage of 1 mg/kg for 10 days. The concentration of methyl mercury in the blood was 0.11 ± 0.02 mM in the former and 40.4 ± 5.7 μM in the latter.

4) The results obtained in in vitro experiments show that both organic and inorganic mercury compounds increase in the noradrenaline output from adrenergic nerve terminals independent of the presence or absence of extracellular calcium. It seems likely that the modification of SH groups is involved in this effect of mercury compounds. The mechanism of the mercury compounds on the evoked noradrenaline output was discussed.

ISOLATION OF THE ANTIGENIC VARIANTS OF LEPTOSPIRAS FROM EXPERIMENTALLY INFECTED PUPPIES AND PIGS

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Attempts were made in the present study to isolate antigenic variants of leptospiras from experimentally infected puppies and pigs. Twelve mongrel puppies were inoculated with *Leptospira interrogans* serovar *canicola* strain Moulton either intracardially or subcutaneously (inoculum size, 10^6 to 10^8). Five specific pathogen free pigs were inoculated intravenously with *Leptospira interrogans* serovar *pomona* strain MLS (inoculum size, 10^9). The blood obtained at the febrile stage, the kidneys obtained at the time of death or euthanasia and the inocula used for injection were inoculated on a solid medium containing the homologous immune serum.

A large number of medium and small colonies and a small number of large colonies of *canicola* were developed after an incubation period of 16 to 24 days on the solid immune serum medium. The antigenic variants of *canicola* were 19 of 40 large colonies, 3 of 40 medium colonies and 3 of 51 small colonies from the blood of puppies, and 4