control. In all results cited the differences between treated and control animals were statistically significant ($P < 0.05$). It is apparent therefore that the castrated animals were more sensitive to the action of the drug, when given at low doses than the intact animals.

In contrast with the 50% decrease in incorporating ability and the lower polyribosome content of ribosomes from skeletal muscle of castrated immature rats (Breuer & Florini, 1965), we could find only a slight decrease (92% of intact control) in the incorporating ability of ribosomes from castrated adult rats and virtually no differences between the sucrose density gradients of ribosomes from intact and castrated animals.

These results are consistent with the idea that the susceptibility of muscular protein synthesis to the antianabolic action of anti-inflammatory glucocorticoids is, in spite of previous findings (Bullock, Peters & White, 1969), to some extent moderated by androgens.

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Effect of Cortisone on Transfer Ribonucleic Acid and Aminoacyl-Transfer-Ribonucleic Acid Synthetases in Rat Liver

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Prior RNA synthesis is consistently given as the explanation for the subsequent induction of selected enzymes by glucocorticoids in mammalian liver. Because of the central role of tRNA in translation of the genetic message and because of the known quantitative and/or qualitative changes in these parameters under a variety of pathophysiological syndromes (reviewed by Baliga, Borek, Weinstein & Srinivasan, 1969), including the changes brought about by two animal hormones [oestrogen on chick oviduct (O'Malley, Aronow, Peacock & Dingman, 1968) and thyroxine on rat liver (Yang & Sanadi, 1969)] and a plant hormone [6-benzyladenine (Anderson & Cherry, 1969)], it was important to determine whether the 20–30% increase in

tRNA synthesis (with orotic acid as the precursor), observed here as early as 30 min after cortisone administration, reflected general increase in all tRNA species or stimulation of selected tRNA species.

Co-chromatography of doubly labelled tRNA, prepared from saline- or cortisone-injected rats, in presence of [^{14}C]- and [^3H]-orotic acid respectively, on a benzoylated DEAE-cellulose column, where each type of tRNA is eluted as a sharp peak at a characteristic position, revealed a constant $^3\text{H}/^{14}\text{C}$ ratio over the entire range of u.v.-absorbing material, indicating that all tRNA species were uniformly labelled. Similarly, the amino acid-acceptance capacities were unaltered after cortisone administration when tested with synthetases both from normal and from hormone-injected rats. Possible alterations in selected isoaccepting species (see references) were next investigated. Co-chromatography on an RPC-Freon column of tRNA^{Leu} or tRNA^{Tyr}, obtained from saline- or cortisone-treated rats and aminoacylated *in vitro*, did not reveal qualitative differences in the isoaccepting species for these two tRNA species. Modification of tRNA function by cortisone through attachment or incorporation into tRNA was investigated by density-gradient centrifugation. No binding to tRNA of [^3H]cortisone administered *in vivo* or [^3H]cortisol *in vitro* was evident.

From these and other studies it seems that the general increase in liver tRNA synthesis effected by cortisone is likely to be a prelude to, and part of, the hepatomegaly that follows hormone administration, and is probably not related to the induction of specific enzymes by the glucocorticoid.

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Incorporation of ^{14}C from [^{14}C]Glucose into Amino Acids by Rumen Bacteria

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The extent to which the rumen microbial population can synthesize amino acids from carbohydrate and simple nitrogen sources and thus supplement the low amounts of amino nitrogen in the ruminant diet is largely unknown. However, pure culture

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