

PROGRAM ADMINISTRATION

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MJC # 55-65

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Title: A study of hemoglobin metabolism in mammals, as affected by radiation and toxicity.

Objective: To measure the rate of catabolism of hemoglobin, and to ascertain whether anabolism is altered, as determined by the magnitude of coproporphyrin I excretion.

Present Status: The amount of urobilinogen in the feces is closely related to the rate of hemoglobin catabolism. Little is known about the effect of heavy metals on urobilinogen excretion, except that the amount in the urine may be increased as a result of liver damage. It is fairly well established that the total amount of coproporphyrin I excreted, is in close relationship with the rate of hemoglobin anabolism. Little is known of the effect of radiation in this regard. Preliminary studies in four dogs showed at least a temporary diminution in total urine coproporphyrin excretion following total body x-ray administration.

Preliminary studies in dogs have revealed a consistent rise in fecal urobilinogen-excretion about one to three weeks after 200-300 single dose x-ray.

Proposed Program: Coproporphyrin, protoporphyrin and deuteroporphyrin will be quantitated in 5 to 10 grams samples of feces in experimental animals and in humans with either radiation or metal exposure. The total coproporphyrin in the urine, and the feces urobilinogen will also be determined.

Reason for Proposed Work: A complete picture of porphyrin excretion cannot be obtained from urine studies only, since it has been shown that the urine-feces ratios may vary under certain conditions, i.e., liver dysfunction. In addition, the feces contains certain porphyrins which are not present in the urine and which might yield valuable information.

Remarks: It is desired, also, to gain more information regarding the anemia which follows excessive radiation exposure.

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Man-Months Authorized 2

Submitted by R. M. Zagaria
Approved by S. Schwach
Group Leader

Estimated Completion Date _____
Estimated Man-Months to Complete _____

Supervisor Responsible _____

Section Chief

Division Director

Authorized by _____

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