administered in the diet, had no protective action on mice exposed to acute whole body x-radiation. 3. Rutin complex, hesperidin methyl chalcone, and citrus vit. P had no protective effect on rats and guinea pigs exposed to acute whole body x-irradiation. Supplemental vit. C did not enhance the action of the flavonoids or decrease mortality. 4. The $LD_{50}$ of 250 kvp x-ray, based on the 30-day mortality, for the $CF_1$ mice used in this experiment, was approximately 550 r.

Rutin, de-ionized rutin, de-ionized morin, dihydroquercetin, homoeriodictyol and xanthorhamnin were supplied by Dr. S. H. Wender and Dr. T. B. Gage of the University of Oklahoma; rutin, quercitrin and quercetin by Dr. J. F. Couch of the United States Department of Agriculture; solubilized rutin in sterile ampules, rutin and piperazine hexahydrate by the Abbott Laboratories; hesperidin, hesperidin methyl chalcone, naringen, calcium flavonate, and lemon juice infusion (LPI) by Dr. A. J. Lorenz of the California Fruit Growers Exchange; and citrus vitamin P (CVP) by the Vitamerican Oil Co.

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## Eosinopenia Produced by ACTH in Patients with Schizophrenia. (19492)

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The contention that adrenal cortical function is deranged in patients with schizophrenia, particularly those with long-standing disease, has been advanced for several years by Pincus, Hoagland, and their associates(1). Using changes in urinary excretion of sodium, potassium, uric acid, and steroids, and in the level of circulating blood lymphocytes as indices, they have reported that as few as 20% of schizophrenic subjects respond in normal fashion to the injection of 25 mg of pituitary adrenocorticotropic hormone. Despite the

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TABLE I. Fasting Eosinophil Levels and Fall After ACTH in Group of Schizophrenic Patients.

| Subject | Nov., 1950 — Fasting eosinophils, mm³ | Nov., 1950 — % fall 4 hr after ACTH, 25 mg i.m. | Dec., 1951 — Fasting eosinophils, mm³ | Dec., 1951 — % fall 4 hr after ACTH, 25 mg i.m. |
|---|---|---|---|---|
| B | 273 | 68 | 283 | 67 |
| E | 275 | 48 | 250 | 29 |
| Mc | 53 | 43 | 53 | 62 |
| N | 153 | 69 | 127 | 38 |
| S | 211 | 48 | 294 | 52 |
| T | 12 | 42 | 122 | 52 |
| G | 83 | 82 | 138 | 43 |
| H | 83 | 66 | 80 | 69 |
| K | 381 | 49 | 379 | 47 |
| L | 75 | 64 | 64 | * |
| Mi | 155 | 51 | 148 | 29 |
| R | 200 | 24 | 172 | 15 |
| Sv | 46 | 59 | 52 | 61 |
| F | 103 | 65 | 146 | * |
| Fo | 72 | 63 | 77 | 90 |
| Ha | 177 | 72 | 356 | 72 |
| J | 267 | 36 | 439 | 53 |
| Mic | 664 | 63 | 711 | 59 |
| Ni | 67 | 69 | 57 | * |
| LW | 202 | 78 | 155 | 74 |
| A | 323 | 48 | 139 | 88 |
| Ma | 314 | 63 | 459 | * |
| P | 43 | 58 | 77 | 61 |
| Ra | 228 | 50 | 208 | * |
| Si | 127 | 70 | 103 | 85 |
| Su | 250 | 18 | 242 | 33 |
| JW | 127 | 32 | 472 | 44 |
| Kr | 253 | 71 | 200 | * |
| Ku | 283 | 65 | * | * |
| Mu | 111 | 50 | * | * |

* Not determined.

demonstration by other investigators of an apparently normal response to ACTH by patients with schizophrenia(2-4), the postulated hypoadrenocorticism in such patients has been used as a rationale for therapy of this disorder with cortisone(5). In addition, the schizophrenic subject's response to ACTH has been considered of prognostic significance in terms of the anticipated efficacy of electroconvulsive therapy(6). Hence it seemed pertinent to present material on the eosinopenia produced by ACTH‡ in 30 patients with long-standing mental illness.

‡ Supplied by Armour & Co., Chicago, Ill.

*Subjects and method.* These data have been accumulated during the course of a project now in progress at the Elgin State Hospital designed to investigate nicotinic acid-tryptophane relationships in human subjects. The group being studied includes 30 male patients, aged 30 to 63 years, who have been hospitalized because of schizophrenia for 2 to 19 (average: 11) years. Eosinophil counts were determined on venous blood before, and 4 hours following intramuscular injections of 25 mg of ACTH, according to the method of Thorn(7). The initial studies were carried out prior to the institution of the experimental regimen, and the procedure was repeated after the subjects had been on a moderately low-protein diet for one year.

*Results.* All but 5 patients showed on at least one occasion a 50% or greater fall in circulating eosinophils following the injection of ACTH (Table I).

These observations are consistent with a normal eosinopenic response to ACTH in at least 25 of 30 patients with schizophrenia of long duration. Also of interest is the close correlation in several subjects of the 2 fasting eosinophil levels determined one year apart.

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