by mouth with D,l-3-hydroxykynurenine and D,l-kynurenine, we obtained results that can be summarized as follows:

1. The animals treated with a single dose of 50 mg of D,l-3-hydroxykynurenine eliminated with the urine in the following 48 hr 17–19.7% (calcd on the wt of 3-hydroxykynurenine employed) of xanthurenic acid.

2. The animals treated with 3 doses of 12.5 mg of 3-hydroxykynurenine (total, 37.5 mg in 24 hr) eliminated (in 48 hr) 20–28% of xanthurenic acid.

3. By administering 46.5 mg of D,l-kynurenine in a single dose (quantity corresponding to one of 3-hydroxykynurenine in the analogous experiments), an elimination of 2.5–4.2% (calcd on the wt of kynurenine) of xanthurenic acid was obtained.

4. With kynurenine divided into 3 doses of 11.6 mg each (total, 34.8 mg in 24 hr, quantity corresponding to one of the 3-hydroxykynurenine in the analogous experiments) an elimination of 9.1–11.2% of xanthurenic acid was obtained.

We therefore assume that xanthurenic acid is formed *in vivo* in the following manner:

Tryptophan→kynurenine→3-hydroxykynurenine→
→xanthurenic acid

The determinations of xanthurenic acid were made by a method which also takes into consideration the determination of the kynurenic acid studied by Musajo and Coppini.

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Depilatory Action of the Intermediary Polymers of Chloroprene[1]

Peter Flesch and Sheldon B. Goldstone[2]

Department of Dermatology, School of Medicine, University of Pennsylvania, Philadelphia

Temporary hair loss among workers engaged in the manufacture of neoprene rubber has been attributed to the inhalation of the volatile intermediary polymers of chloroprene, probably the cyclic dimers (*1, 2*). A single application of these compounds to the skin of animals produces complete local hair loss within 10 days, with disappearance of the follicles and sebaceous glands and excessive thickening of the epidermis. All these changes are reversible within 6 weeks.

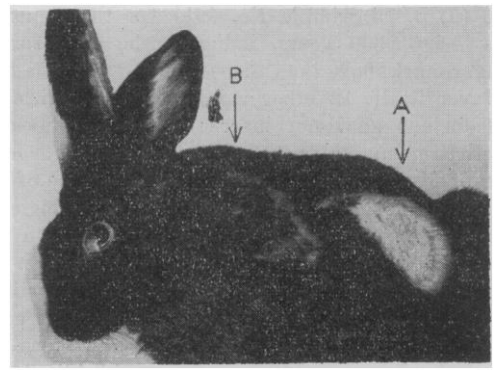

FIG. 1. *A*, hair loss in rabbit 10 days after application of a mixture of intermediary polymers of chloroprene; *B*, regrowth of hair in a patch treated 4 weeks earlier.

The depilatory agents were prepared as described by Ritter and Carter[3] (*1*). Local hair loss in rabbits, mice, and guinea pigs, and loss of feathers in chicks, were consistently obtained after a single application of 0.1–1 ml polymer mixture to the skin (Fig. 1). The localized temporary cessation of hair growth suggested interference with the normal process of keratinization, which involves the oxidation of – SH groups to – S – S – bridges. The intermediary polymers inactivated *in vitro* the free – SH groups of glutathione, human epidermis, and mouse liver homogenates, as determined by a previously described method (*3*). The concentrations necessary for this *in vitro* inactivation compared favorably with those required to induce baldness in animals. Inhibition of a sulfhydryl enzyme, succinic dehydrogenase (*4*), occurred with the same concentrations as inactivation of – SH groups (Fig. 2). The destruction of epidermal sulfhydryl groups was also demonstrated by histochemical methods (*5, 6*). This action of the chloroprene dimers differs from another reversible depilatory agent, thallium, which even in toxic concentrations has no effect on free – SH groups *in vitro* (*7*).

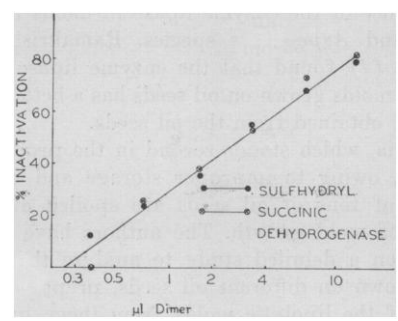

FIG. 2. Inhibition of free sulfhydryl groups and of succinic dehydrogenase activity in 10 mg mouse liver homogenate after 15 min incubation at room temperature with various concentrations of the depilatory agent.

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[3] Chloroprene was obtained through the courtesy of E. I. du Pont de Nemours & Co.

The depilatory fractions of chloroprene polymers open new possibilities in the treatment of fungous infections of the scalp, in studies of hair growth and epidermal carcinogenesis (*8, 9*). The reversible transformation of the thin hairy animal epidermis into the thick hairless epidermis resembling human skin facilitates separation of the epidermis and its use for experimental purposes. Studies along these lines are in progress. Detailed data will be published elsewhere.

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Decomposition of Streptomycin[1]

David Pramer and Robert L. Starkey

Department of Microbiology,
New Jersey Agricultural Experiment Station,
Rutgers University, New Brunswick

Some antibiotics are susceptible to decomposition (*1*). This is particularly the case with penicillin that is inactivated by many microorganisms through the enzyme penicillinase. Streptomycin is very resistant to decomposition, so much so that there is a prevailing opinion that it cannot be decomposed by microorganisms, although it is inactivated by such substances as H_2S, cysteine and certain other sulfhydryl compounds, and hydroxylamine (*2*). Nevertheless, the fact that it is a natural product gives reason to believe that it can be destroyed by microorganisms. The following studies with soils indicate that this is the case.

A method devised whereby streptomycin can be quantitatively determined in soil (*3, 4*) was used to trace the course of disappearance of the antibiotic. Streptomycin added to heat-sterilized soil at the rate of 1,000 μg/g of soil lost no activity in a period of three weeks, which was the extent of the test period. In unsterile soil more than half of the streptomycin activity had disappeared in one week and the loss was complete in two weeks. In soils receiving additions of glucose or glutamic acid, initial attack of the streptomycin was somewhat delayed. A second and third addition of streptomycin disappeared somewhat more rapidly than the first.

Soils that had been treated with streptomycin and also slime from a disposal system where waste from a streptomycin plant was treated, were inoculated into a mineral salts medium containing streptomycin as the only organic constituent. Bacteria developed in the medium and continued to grow in the same medium through serial transfers. Development was enhanced by continuous shaking during the incubation period. The crude cultures were plated on a nutrient agar medium containing 1,000 μg of streptomycin per ml. Various colonies were isolated from the plates and inoculated into the specific streptomycin medium. Several of the cultures grew and inactivated the streptomycin. The fact that the cultures were able to grow in the medium where streptomycin was the only organic constituent indicates that the streptomycin molecule must have been decomposed and that the inactivation was not due to some product of growth such as those mentioned above.

There was little or no loss of streptomycin from the solution medium supporting growth of crude and pure cultures for the first few days. In one week a significant amount of the activity was lost, and after 10–14 days all streptomycin activity had disappeared.

All the active bacterial cultures were alike according to the limited tests that have been made. The bacterium is a motile, nonsporulating, gram-negative rod producing a greenish-yellow pigment on nutrient agar. Litmus milk remained unaltered, and nitrate was not reduced. Gelatin was liquefied, but neither acid nor gas was produced from glucose, sucrose, or lactose. Although incompletely characterized, the bacterium is probably a member of the genus *Pseudomonas.*

It was characteristic of all substrates (soil, various solution media) and all cultures (soil, crude and pure cultures in solution media) that during decomposition of the streptomycin, volatile material having a characteristic pungent odor suggestive of malt and pyridine was liberated.

[1] Journal Series Paper, New Jersey Agricultural Experiment Station, Rutgers University, The State University of New Jersey, Department of Microbiology.

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