

In view of these observations it seems likely that peptide deuterium-hydrogen exchange rates reflect more the state and configuration of acidic and basic side chains in the local environment than the percentage of hydrogen-bonded peptide groups in proteins (3).

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References and Notes

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Schistosoma mansoni: Natural Infection of Cattle in Brazil

Abstract. In an area in Brazil where schistosomiasis has long been endemic, examination of cattle which were slaughtered for food disclosed the presence of adult *Schistosoma mansoni* in the mesenteric veins of four animals. Eggs of *S. mansoni* were found in the feces and rectal mucosa of one animal.

Knowledge of possible animal hosts of a human parasite is important for the control of the infection in endemic areas. Several animal hosts naturally infected with *Schistosoma mansoni* in Africa and South America have been found since 1952. These infections have been reported frequently in South America in small mammals, such as domestic and wild rodents, and the opossum. In Africa, besides rodents, baboons have also recently been found to be infected with *S. mansoni*.

Paulista, State of Pernambuco, a small town near Recife is well known as an important endemic area for schistosomiasis caused by *S. mansoni*. In the abattoir at Paulista, 29 animals, among the cattle killed for food during the months from April to July 1962, were examined and their mesenteric veins were carefully searched for worms. All the animals had been raised in the endemic area. Four animals out of the total at autopsy were infected with adult schistosomes morphologically indistinguishable from *S. mansoni*. Although a thorough search was made no eggs could be found in the feces of three of the infected animals; however, in the fourth infected animal laterally spined eggs were discovered when the mucosa of the animal's rectum was scraped. A total of 67 eggs were seen. All of them

had become degenerated and showed a granular interior structure. Eggs were also present in the mucus and in the feces adherent to the mucosa of the animal's rectum. This is the first record of natural infection with *S. mansoni* in cattle. Until the present time no other large quadruped has been found to be a natural host of *S. mansoni*.

The possibility that the schistosome reported here and found in cattle could be a member of the *S. mansoni* complex, an animal instead of a human schistosome, was considered. However, no schistosome species, other than *S. mansoni*, has ever been reported in any mammal in Brazil. The presence of subterminal spines in the eggs of the African species, *Schistosoma rodhaini*, easily distinguishes it from *S. mansoni*, whose eggs have lateral spines.

Although *S. mansoni* could be considered a trematode that lives in several mammals besides man, the significance of the role that animal hosts may play in the maintenance of *S. mansoni* in nature is not understood. (1).

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Note

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Atmospheric Photochemical Reactions Inhibited by Iodine

Abstract. The inhibition by iodine of the atmosphere photochemical reaction of olefin with nitrogen dioxide has been confirmed. The presence of iodine in concentrations comparable to those of the reactants retards the formation of aldehyde, peroxyacetyl nitrate, and aerosol as well as the disappearance of olefin. The reaction of iodine with atomic oxygen may account for this inhibition. A number of other potential inhibitors were found to be ineffective.

Photochemical reactions in the atmosphere play a crucial part in the development of several of the symptoms of smog. The oxidation of hydrocarbons initiated by the photolysis of nitrogen dioxide, with the participation of both nitric oxide and nitrogen dioxide, accounts for many of the observed facts, of which one is the formation of ozone. The addition of sulfur dioxide enhances aerosol formation. Free radi-

Table 1. Photolysis of cis-2-butene and nitrogen dioxide in air (5 ppm each) with increasing concentrations of iodine.

Iodine (ppm, vol./vol.)	Initial rate of aldehyde formation (ppm/min)
0	0.30
0.22	0.23
0.32	0.075
3.8	0.046
5.6	0.024

cals may be involved although there is doubt that chains of any length could develop in the presence of oxides of nitrogen. There have been unpublished reports that molecular iodine inhibits the formation of ozone in systems of irradiated hydrocarbon and nitrogen oxides (1). In addition to possible practical use in controlling atmospheric conditions, inhibition studies may reveal the mechanism of these reactions.

Olefins have been found to be the most active of the hydrocarbons. During photolysis of mixtures of olefin and nitrogen oxide at low concentrations in air, the olefin disappears rapidly and yields an approximately stoichiometric amount of a carbonyl compound, along with alkyl nitrate, peroxyacetyl nitrate, ozone, and small amounts of other products. The techniques of long-path infrared spectroscopy have proved particularly valuable for the study of these very dilute reactions (2, 3). Accordingly, a short series of experiments were undertaken to investigate the reported inhibition by iodine of atmospheric photochemical reactions.

As a test mixture, concentrations of 5 parts per million (ppm) each of nitrogen dioxide and cis-2-butene in normal air were used. First experiments showed that the formation of the phytotoxic compound peroxyacetyl nitrate was suppressed by the addition of iodine. A further series of experiments showed that the formation of aldehyde was also inhibited.

Instead of dosing the long-path cell with a measured amount of elemental iodine, which is corrosive to many of the metal parts, a few crystals were allowed to vaporize in the circulation system. The amount in the vapor was measured by bubbling a measured volume of the air through potassium iodide solution and estimating the resulting iodine colorimetrically. The values obtained are given in Table 1.

At these concentrations the only cis-2-butene absorption strong enough to measure was the C-H band at 3.4 microns. The products of the reaction collectively absorbed much less at this