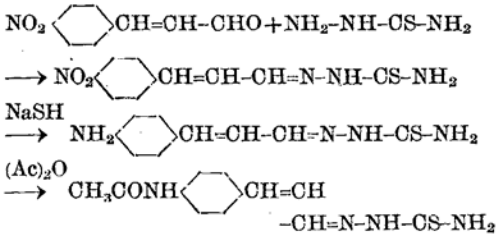
LETTER

Synthesis of *p*-Acetylaminocinnamaldehyde Thiosemicarbazone

By Tamio NISHIMURA

(Received May 7, 1951)

This paper reports the synthesis of a new antituberculous substance, *p*-acetylaminocinnamaldehyde thiosemicarbazone having activity in concentration of 1.3 γ/ml. (Aoyama B strain, Sauton medium). The reactions are given in the scheme:



A mixture of 8.9 g. of *p*-nitrocinnamaldehyde, 4.6 g. of thiosemicarbazide and 90 ml. of ethanol was heated by stirring on a steam bath for 20 minutes. After cooling, the solid product was filtered, washed with ethanol and dried, giving 11.9 g. (92%) of *p*-nitrocinnamaldehyde thiosemicarbazone (I), m. p. about 224° (decomp.). *Anal.* Calcd. for $C_{10}H_{10}O_2SN$: N, 22.38. Found: N, 22.24.

After saturation of a mixture of 20 ml. of ethanol and 8 ml. of 2 *N* aqueous sodium hydroxide solution with hydrogen sulfide, 2.5 g. of (I) was added to the mixture in one portion. This mixture was heated at 50° for ten minutes, while crystals began to separate. After heating for further three minutes at 75° and after cooling, crystals were filtered, washed first with ethanol, then with water and again with ethanol, giving 1.6 g. (73%) of *p*-aminocinnamaldehyde thiosemicarbazone (II), m. p. 207° (decomp.). *Anal.* Calcd. for $C_{10}H_{12}N_4S$: C, 54.53: H, 5.50. Found: C, 54.29; H, 5.27.

To 1.1 g. of (II) suspended in 50 ml. of ethanol was added 2 ml. of acetic anhydride and the mixture was stirred for five minutes. Crystals were filtered and washed with water, giving 2.5 g. (95%) of *p*-acetylaminocinnamaldehyde thiosemicarbazone (III), m. p. 225° (decomp.). *Anal.* Calcd. for $C_{12}H_{14}OSN_4$: C, 54.95; H, 5.38. Found: C, 54.89; H, 5.48.

The nitro and amino compounds (I and II) also proved to have antituberculous activity.

Biological evaluation of these substances was executed by Dr. T. Takebe. The author wishes to express his gratitude to Dr. T. Takebe for his favor.

Chemical Laboratory,
The Kitasato Institute, Tokyo