HETEROCYCLES, Vol. 4, No. 11, 1976

REACTION OF SCHIFF BASES WITH METAL HALIDE IN DIMETHYL SULFOXIDE

Haruo Ogura, Masakazu Sakaguchi
School of Pharmaceutical Sciences, Kitasato University,
Shirokane, Minato-ku, Tokyo 108,
Toshihiko Okamoto,
Faculty of Pharmaceutical Sciences, University of Tokyo,
Hongo, Bunkyo-ku, Tokyo 113,
Kinji Gonda, and Shozo Koga
Institute of Applied Microbiology, University of Tokyo,
Yayoi, Bunkyo-ku, Tokyo 113

On the relation of a series of synthetic studies of nucleosides, we have reported the synthesis of Schiff bases of sugar-aldehydes with diamines. On the way of the nuclear magnetic resonance studies of the Schiff bases, metallic mercury has been separated by the reaction with mercuric salts in dimethyl sulfoxide.

Reported reaction mechanisms of separating of metallic mercury on the reaction of olefins and mercuric salts are an ionic one which is confirmed by the nuclear magnetic resonance spectra. On the other hand, the titled reaction mechanisms were elucidated as a radical from the studies on the nuclear magnetic resonance, the chemically induced dynamic nuclear polarization, and the electron spin resonance techniques.

The Schiff bases were converted with mercuric chloride in dimethyl sulfoxide to pyrazine derivatives in a high yield. For example, 1,3-dimethylpteridine-2,4-dione was obtained from the reaction of Schiff base of 5,6-diamino-1,3-dimethyluracil with glycolaldehyde and mercuric chloride. Similarly, 2,3-dicyano-5-methylpyrazine was obtained from Schiff base of diaminomalononitrile with (±)-glyceraldehyde and mercuric chloride in dimethyl sulfoxide.