

NEW SYNTHESIS OF PYRIMIDO[5,4-e]-as-TRIAZINES BY THE
REACTION OF 6-HYDRAZINO-1,3-DIMETHYL-5-NITROSOURACIL
WITH BENZYLIDENETRIPHENYLPHOSPHORANES

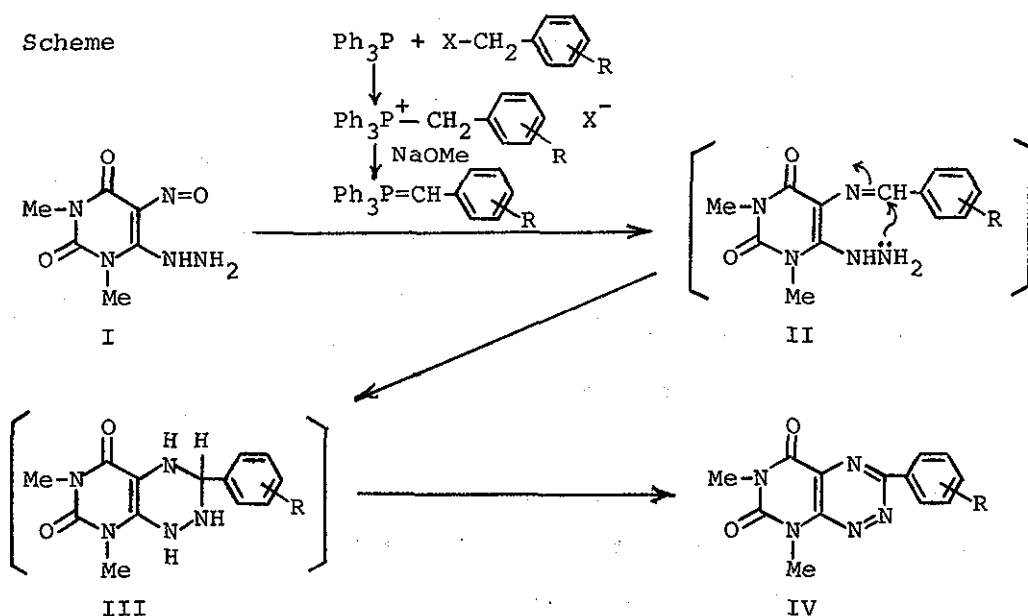
Keitaro Senga,* Misuzu Ichiba, Yukako Kanamori, and
Sadao Nishigaki
Pharmaceutical Institute, School of Medicine, Keio Uni-
versity, 35, Shinanomachi, Shinjuku-ku, Tokyo 160, Japan

Treatment of 6-hydrazino-1,3-dimethyl-5-nitrosouracil
with benzylidenetriphenylphosphoranes gave the corre-
sponding 3-arylfervenuilins (3-aryl-6,8-dimethylpyrimido-
[5,4-e]-as-triazine-5,7(6H,8H)-diones).

Recent papers¹ from our laboratory described that the reaction
of 6-amino-1,3-dimethyl-5-nitrosouracil with benzylidenetriphenyl-
phosphoranes or phenacylidenetriphenylphosphoranes gives purines
and pteridines, respectively. In conjunction with these findings
and our interest in pyrimido[5,4-e]-as-triazines,² we wish to
report the reaction of 6-hydrazino-1,3-dimethyl-5-nitrosouracil (I)³
with benzylidenetriphenylphosphoranes, leading to 3-arylfervenuilins
(3-aryl-6,8-dimethylpyrimido[5,4-e]-as-triazine-5,7(6H,8H)-diones;
IVa-e).

Heating of a mixture of I (0.199g, 0.001 mol), sodium methoxide

(0.162g, 0.003 mol), and benzylidenetriphenylphosphonium bromide (prepared by treatment of benzyl bromide (0.256g, 0.0015 mol) and triphenylphosphine (0.393g, 0.0015 mol) in dry dimethylformamide (5 ml) at 90°C for 30 min) at 90°C for 3 hr, followed by evaporation *in vacuo* to dryness, and subsequent dilution with ethanol caused the separation of 3-phenylfervenulin (IVa). Likewise, the reaction of I with other benzylidenetriphenylphosphonium halides afforded the corresponding 3-arylfervenulins (IVb-e) (Table).⁴



As depicted in the Scheme, this new pyrimido[5,4-e]-as-triazine synthesis presumably involves the initial formation of the pyrimidine anil (II)⁵ by a type of Wittig reaction between the nitroso group of I and benzylidenetriphenylphosphoranes, followed by intramolecular cyclization to (III), and subsequent aromatization. The formation of benzylidenetriphenylphosphoranes seems

reasonable, since no reaction was observed in the absence of base or triphenylphosphine.

Table 3-Arylfervenulins

Benzyl halide	Product ^a	R	Mp (°C)	Yield (%)
C ₆ H ₅ -CH ₂ Br	IVa	H	273-275	19
4-C ₆ H ₄ -CH ₂ Cl	IVb	4-Cl	280-283	27
3,4-Cl ₂ -C ₆ H ₃ -CH ₂ Cl	IVc	3,4-Cl ₂	259-260	72
4-NO ₂ -C ₆ H ₄ -CH ₂ Br	IVd	4-NO ₂	>300	26
4-Me-C ₆ H ₄ -CH ₂ Cl	IVe	4-Me	286-287	18

a) All products were recrystallized from ethanol.

REFERENCES AND NOTES

- 1 a) K. Senga, H. Kanazawa, and S. Nishigaki, J.C.S. Chem. Comm., 1976, 155; b) K. Senga, H. Kanazawa, and S. Nishigaki, J.C.S. Chem. Comm., 1976, 588.
- 2 a) M. Ichiba, K. Senga, S. Nishigaki, and F. Yoneda, J. Heterocyclic Chem., 1977, 14, 175; b) K. Senga, M. Ichiba, and S. Nishigaki, Heterocycles, 1977, 6, 273; c) M. Ichiba, S. Nishigaki, and K. Senga, J. Org. Chem., "accepted"; d) M. Ichiba, S. Nishigaki, and K. Senga, Heterocycles, "accepted."
- 3 W. Pfeleiderer and K.-H. Schündehütte, Annalen, 1958, 615, 42.
- 4 Compounds IVa-e were identical in all respects with the authentic samples.^{2d}
- 5 The reaction of nitrosobenzene with Wittig reagents has been reported to give the corresponding anils: a) A. Schönberg and K.H. Brosowski, Chem. Ber., 1959, 92, 2602; b) A.W. Johnson, J. Org. Chem., 1963, 28, 252.

Received, 17th October, 1977