

LETTERS TO THE EDITOR

γ -Irradiation of Thymine Dimers in Aqueous Solution

Dear Sir:

Since the appearance of our paper (1), we have found that two important references to previous work on ionizing radiation action on thymine dimers were overlooked. We wish to rectify this omission and briefly discuss these earlier results in relation to our own.

B. Schmidt, D. Hartmann, K. Grossgebauer, and W. Schumacher (2) in a brief note showed that thymine dimers in aqueous solution could be split by 34 mev electrons to give thymine.

E. R. Lochmann (3) used 50 kv X-rays to split thymine dimers in vitro and in vivo. Several doses were given in air. For \widehat{TT} in vitro for example, at a dose of 600 kr, 68% of the dimer remained, with the appearance of 25% thymine, 4% urea, and 3% unknown products. The author concluded that thymine in the dimer form was relatively resistant to cleavage (to urea for example) and that such cleavage occurred by X-ray action after dimer splitting. Quantitative comparison of their results with ours is difficult because of the different radiations and conditions. However the orders of magnitudes for \widehat{TT} splitting and T production are the same as ours. Lochmann's results indicate the strong possibility that some of our unknown product at high doses is urea resulting from thymine degradation. These results do not necessarily bear on our very low dose results. The in vivo results with \widehat{TT} in the DNA of *Enterococcus stei* indicate that, for doses as high as 2000 kr, much less dimer cleavage was occurring than for in vitro irradiations. Protection of the in vivo DNA by the surrounding environment was given as a possible hypothesis for this result.

We wish to apologize to these authors for inadvertently missing their earlier work.

Received for publication 27 April 1968.

REFERENCES

1. DEERING, R. A., and WALLACE SNIPES. 1968. *Biophys. J.* **8**:326.
2. SCHMIDT, B., D. HARTMANN, K. GROSSGEBAUER, and W. SCHUMACHER. 1963. *Naturwissenschaften* **50**:473.
3. LOCHMANN, E. R. 1963. *Naturwissenschaften*. **50**:474.

R. A. DEERING
WALLACE SNIPES
Biophysics Department
The Pennsylvania State University
University Park, Pennsylvania 16802