

## COMMENT AND RESPONSE

### Rediscovering Pyrotartaric Acid

Volume 40, issue 1 contained a paper on the Volatile Salt of Tartar (G. Panzarasa, "Rediscovering Pyrotartaric Acid: A Chemical Interpretation of the Volatile Salt of Tartar," *Bull. Hist. Chem.*, 2015, 40, 1-8). Prof. E. J. Behrman wrote to explain in greater detail some of the chemistry described in that paper, and to point out an error. Prof. Behrman's letter and Dr. Panzarasa's response are printed below.

—Editor

#### Comment by Prof. Behrman

Dear Editor,

Panzarasa's recent paper in this journal (1) discussed the early history of pyrotartaric acid (2-methylsuccinic acid). The final section of this paper is titled "Modern Organic Chemistry and the Solution to the Enigma". His Figure 4 shows the transformation of tartaric acid (4 carbons) to pyrotartaric acid (5 carbons) by loss of water. The chemistry is clearly more complex. There has not been a great deal of work on this chemistry but Erlenmeyer made a plausible suggestion in 1885 (2) which was substantiated by Wolff and by de Jong with experimental work in 1901 (3, 4). Brown's work in the middle of the twentieth century (5) is also relevant. The process is initiated by condensation of two molecules of pyruvic acid (another decomposition product of tartaric acid) followed by lactonization and then decarboxylation. Panzarasa also states in footnote 25 that pyrotartaric acid plays a large part in the Krebs cycle. This is not so.

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#### References and Notes

1. G. Panzarasa, "Rediscovering Pyrotartaric Acid: A Chemical Interpretation of the Volatile Salt of Tartar," *Bull. Hist. Chem.*, **2015**, 40, 1-8.

2. E. Erlenmeyer, "Zur Bildung der Brenzweinsäure," *Ber. Dtsch. Chem. Ges.*, **1885**, 18, 994-996.
3. L. Wolff, "Ueber die Bildung der Brenzweinsäure aus Brenztraubensäure," *Justus Liebigs Ann. Chem.*, **1901**, 317, 22-26.
4. A. W. K. de Jong, "L'action de l'acide chlorhydrique sur l'acide pyruvique," *Recl. Trav. Chim. Pays-Bas*, **1901**, 20, 81-101; *ibid.*, **1902**, 21, 191-208.
5. G. B. Brown, "Methylsuccinic Acid," *Org. Synth.*, **1946**, 26, 54-55.

#### Response by Dr. Panzarasa

Dear Editor,

I would like to express my gratitude to Prof. E. J. Behrman for suggesting such interesting references. Many thanks are due to Dr. A. Osyova for kindly providing access to original papers.

About the statement in footnote 25: it is pyruvic acid, which plays a protagonist role in the Krebs cycle. I apologize for this inaccuracy.

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