The different names used for trientine and triethylenetetramine

Triethylenetetramine dihydrochloride or trientine dihydrochloride has been manufactured for the treatment of Wilson’s disease in the UK, USA and Japan since the early 1980s. Its copper chelating properties have also been investigated for the treatment of diseases unrelated to Wilson’s disease. As a result, triethylenetetramine dihydrochloride has acquired a number of approved, colloquial, and code names:

- Trientine dihydrochloride (BAN and INN)
- Trientine hydrochloride (USAN)
- Cuprid (Merck); Syprine (Merck); Metalite (Tsumura); Laszarin (Protemix); MK 681; PX 811019 (Protemix); Laszarin (Protemix); KD034 (Kadmon).

These names all refer to the same compound, trientine dihydrochloride. BAN is the abbreviation for British Approved Name, INN, International Non-Proprietary Name, USAN, United States Adopted Name. Merck is a US pharmaceutical company, Tsumura a Japanese pharmaceutical company, Protemix a New Zealand company, and Kadmon a US company.

Trientine dihydrochloride is prepared from triethylenetetramine. Triethylenetetramine itself has multiple applications, and also has acquired many different chemical names and code names, which are often used in the chemical literature: triethylenetetramine; N,N’-bis(2-aminoethyl)-1,2-ethanediamine; 1,8-diamino-3,6-diazaoctane; 3,6-diaza-1,8-octanediamine; 1,4,7,10-tetraazadecane; trien; TETA. All these names refer to the same substance, whose linear chemical formula is:

\[
\text{H}_2\text{NCH}_2\text{CH}_2\text{NHCH}_2\text{CH}_2\text{NHCH}_2\text{CH}_2\text{NH}_2
\]

Organic chemists often depict this formula as:

![Chemical structure of triethylenetetramine](image)

Each of the four amino groups of triethylenetetramine can be protonated. For example, addition of hydrochloric acid to triethylenetetramine produces initially triethylenetetramine dihydrochloride where the two terminal primary amino sites are protonated. On further acidification, triethylenetetramine tetrahydrochloride (triente tetrahydrochloride) is formed where all four amino sites are protonated. A French company, GMP-Orphan SAS, is interested in marketing trientine tetrahydrochloride for the treatment of Wilson’s disease.

All four amino groups of triethylenetetramine can coordinate with a cupric ion \(\text{Cu}^{2+}\) to give a 1:1 copper–triethylenetetramine complex ion – the rationale for its use in the treatment of Wilson’s disease.

**Triethylenetetramine complexed with a cupric ion**

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