

BACK PAGE

Rules in pharmacy and music: More in common than you might believe!

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After 25 years of experience in aerosol science, I came into a pharmaceutical company. Before this I worked with design of new measurement equipment, generation of aerosols for toxicological animal experiments, measurement of industrial aerosols and environmental aerosols. In pharmacy, I was surprised to find the high degree of detail required in connection both with achieving the stringent quality performance goals for aerosol generation by inhalers, and also in the associated laboratory measurements of inhaler performance. Such methodological descriptions are, of course, defined by in-house standard operating procedures. Likewise, the apparatuses for aerosol sampling and measurement are carefully described in the pharmacopeial compendia, including tolerances for critical components. Furthermore, the regulatory agencies like to see handling procedures defined in detail, such as shaking of MDIs in preparation for actuation and the setting of air-flow rate-time profiles characteristic of intended patient use for dry powder inhalers.

One of my hobbies is classical music. So I asked myself, if we need defined rules also in music. Of course, my thinking was focused on the works of the world-famous classical composer of the Baroque period, Johann Sebastian Bach (1685-1750), whose esteem after more than 250 years since his death is still growing worldwide, at least in the community of those who love classical music.



St. Thomas Church in Leipzig, Germany, where Bach was director of music

Abert writes (with my translation into English) "At Bach there is no note too much or too less, one is surprised about the unity of the piece of art, which can be justified with mathematical certainty—the aesthetic value of Bach's music is not touched by this."¹

Where can we find the rules, which Bach used for his perfect music? Certainly the rules of harmonization and counterpoint are very important to realize the highly precise outcomes he envisaged at the time of composing. Bach has written many pieces, particularly for the organ, where this methodological preciseness can be studied. The strictest rules are needed in the composition of fugues and it seems, that Bach intended to impart his knowledge to later generations in the "Kunst der Fuge" (Art of the Fugue). For example, in the St. John Passion, the choir sings "Wir haben ein Gesetz" (we have a law) and this choral piece is scored as a fugue. For

Bach, the degree of formality invoked by using the fugal method for this composition is the manifestation of law and therefore fits perfectly with the theme of the text that is being sung by each choir part.

Just as the works of Bach composed by strict application of the rules of music are a remedy for the soul, it occurs to me that a pharmaceutical drug can be a remedy for the body by applying the strict rules with which we are all so familiar in its development and production.

Reference

1. H. Abert, cited in *Die unbekannte Matthäus-Passion* by H. Hahn, Hamburg 1977.

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