

NOTICE OF PUBLICATION



Title: Analyzing standard curves in the chemistry of waters used for aquaculture

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Abstract: The fundamental principle in colorimetric analyses of water chemistry is the relationship between concentration of a particular chemical and color intensity. Color intensity is determined by measuring the absorbance of light of a particular wavelength. The relationship should follow a standard curve made with a series of standard concentrations selected to cover the expected range of unknown samples. The absorbance of a solution is directly proportional to the concentration of absorbing constituents at a fixed light pathlength, and directly proportional to the pathlength at a fixed concentration. Within a certain range of concentrations, the relationship is linear ($y = a + bx$, where y = absorbance, a = the y-intercept, x = concentration and b = slope of line). Linear regression can be utilized to determine the slope (b) of the line and the regression coefficient (r), which describes how well the straight line fits the plotted points from standards. Some spectrophotometers measure only transmittance, in which case the logarithm of transmittance should give a linear relationship with concentration. As reliable standard curves are essential, the purpose of this article is to help aquaculture researchers identify, troubleshoot, and hopefully correct common problems associated with colorimetric analysis of water.

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