Comparison of different methods of analysis of vitamin B12 in fortified food and beverage samples

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A wide variety of food, beverage and supplement products fortified with vitamin B12 are now manufactured to meet a growing public demand. Rapid and less labor intensive methods are required to analyze the vitamin in a large number of samples in a shorter time for quality control and other purposes. The current AOAC methods based on microbiological assay take too long to complete the analysis. We analyzed vitamin B12 in the energy beverage samples by different methods (the AOAC microbiological method, ELISA, Biacore's Biosensor method, R-Biopharm's VitaFast microbiological assay and a HPLC method based on R-Biopharm's immunoaffinity concentration) for comparison. The VitaFast microbiological assay , Biosensor and ELISA methods provided results which were some what different from the AOAC microbiological assay but may be within the expected analytical variation of the methods. The Biosensor method was found to be accurate and precise based on the analysis of the NIST SRM 1846 infant formula as well as different beverage samples. HPLC analysis followed by concentration and clean up on an immunoaffinity column gave accurate and the precise results for the NIST SRM infant formula. The HPLC method provided accurate and precise results also for a variety of beverages and breakfast cereal samples. The evaluated rapid methods (the biosensor and HPLC analysis) were found to be accurate and precise for vitamin B12 analysis in fortified beverage and other studied matrices.