**Interlaboratory Comparison of Food Folate Concentrations Determined by Microbiological Analysis**

Katherine M. Phillips, Kelli M. Wunderlich, John L. Koontz, Virginia Tech, Blacksburg, Virginia, USA; Jacob Exler, Joanne M. Holden, Susan E. Gebhardt, David B. Haytowitz, USDA Nutrient Data Laboratory, Beltsville, Maryland, USA; Robert F. Doherty, USDA Food Composition Laboratory, Beltsville, Maryland, USA

**Objective**

The goal of this study was to evaluate inter- and intra-laboratory variation in total folate determined in a variety of food matrices by microbiological analysis at several commercial and/or university laboratories.

**Results**

Figure 1 compares each laboratory’s mean total folate value according to food matrix. Tukey-Kramer multiple comparison of laboratories was performed in one-way ANOVA using the SAS system (version 8.03, SAS Institute, Cary, NC) for each food. Effects were considered significant when p < 0.05. Folate pizza was the only food for which there was no significant difference across all laboratories. Laboratory D reported unexpectedly high values for total folate content in strawberries (0.92 ± 0.2 µg/100 g) and was significantly different from laboratories A, B, and C. Figure 2 illustrates the European Commission (EC) certified total folate value for each laboratory (A, B, C, D) for the four shipments of certified reference materials. All of the individual total folate values by each laboratory for BCR 487 lie outside the EC certified range. Only two reported values for laboratory A and one value for laboratory B lie within the certified tolerance limits for BCR 485. Two values for laboratory D and one value for laboratory A, respectively, lie within the certified tolerance limits for BCR 121.

**Discussion**

Large variations in total folate concentrations were observed in the same sample composites at different laboratories using microbiological assay. Dry macaroni and frozen pizza are the only two foods in this study that are fortified with folic acid. Naturally occurring folate in the other foods comprises primarily derivatives of folic acid (e.g. folate esters). Differences in the methods used for the microbiological determinations may contribute to the variability in results obtained from non-fortified foods, which might explain why the results passed internal quality control checks.

**References**


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