Fulvic Acid/Mineral Supplements: Science or Snake Oil?

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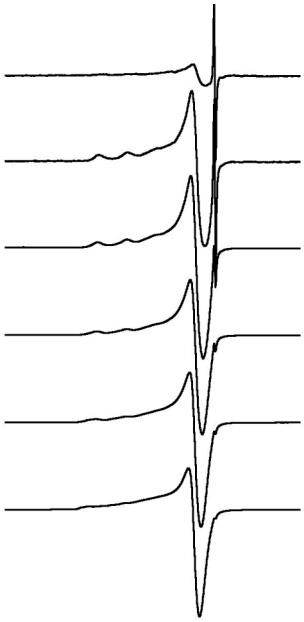

Fulvic and humic acids are the names given to carbohydrate material derived from the breakdown of dead plants. These materials are as yet poorly defined in any quantitative chemical sense. A large body of work exists that describes the environmental origins of particular sources of humic substances and their subsequent effects upon these environments. Further, assays have been developed for various physicochemical properties and some semiquantitative information is available. Particular attention has been paid to the ability of these substances to bind transition ions such as copper (*see right; sequential addition of Cu(II) identifies distinct binding modes by EPR spectroscopy*), though quantitative and structural studies are lacking.

Fulvic acid, in particular, has recently gained favor as a dietary supplement for both humans and animals, often with spectacular claims regarding the benefits. While peer-reviewed research on the possible mechanism of action of fulvic acids is sorely lacking, claims that the putative benefits are related to the proposed ability of fulvic acids to deliver trace elements to the body have been made; indeed, fulvic acid is often marketed as a mineral supplement complex.

We have embarked upon a study of fulvic acids and humic substances with the goal of better physicochemical characterization of these substances through separation of components and subsequent analysis. We are particularly interested in quantifying and understanding structurally the metal-binding properties of fulvic acids obtained from traceable sources and from commercial distributors. Our preliminary work is presented here.