[0017] FIG. **8**. Gene Expression Profile of *Arabidopsis* genes with expression levels changed ≥1.5 fold at p-value ≤0.01 after CP application vs. control;

[0018] FIG. **9**. Volcano Plot of *Arabidopsis* genes with expression levels changed ≥1.5 fold at p-value ≤0.01 after CP application vs. control;

[0019] FIG. **10**. Heatmap of CP-regulated *Arabidopsis* genes compared to control;

[0020] FIG. **11**. Gene Expression Profile of *Arabidopsis* genes with expression levels changed ≥1.5 fold at p-value ≤0.01 after CP 1000 application vs. control;

[0021] FIG. **12**. Volcano Plot of *Arabidopsis* genes with expression levels changed ≥1.5 fold at p-value ≤0.01 after CP 1000 application vs. control;

[0022] FIG. **13**. Heatmap of CP 1000-regulated *Arabidopsis* genes compared to control;

[0023] FIG. **14**. Graph of the effect of a CP composition application on *Arabidopsis* drought tolerance vs. control;

[0024] FIG. **15**. Graph of the effect of a CP composition application on *Arabidopsis* salinity tolerance vs. control;

[0025] FIG. **16**. Graph and photo of the effect of a CP composition application on *Arabidopsis* wilting drought tolerance vs. control;

[0026] FIG. **17**. Schematic of the *Arabidopsis* gene analysis after a CP composition treatment vs. control;

[0027] FIG. **18**. Schematic of the shared up regulated *Arabidopsis* gene by a CP composition compositions;

[0028] FIG. **19**. Schematic of the shared down regulated *Arabidopsis* gene by a CP composition compositions.

DETAILED DESCRIPTION

Materials and Methods

[0029] The composition of matter disclosed herein comprises a mixture of organic molecules isolated and extracted from sources rich in natural organic matter into an aqueous solution. The natural organic matter is primarily derived from plant materials that have been modified to varying degrees over time in a soil environment. Some of the plant materials have been recently deposited in the environment. At least a part of the natural organic matter has passed through a partial process of humification to become partially humified natural organic matter. Humification includes microbial, fungal, and/or environmental (heat, pressure, sunlight, lightning, fire, etc.) degradation and/or oxidation of natural organic matter. Most preferably, CP contains natural organic matter that has not substantially undergone humification (partially humified natural organic matter). In one aspect, the natural organic matter is obtained from environments typically containing or providing 5 ppm, 10 ppm, 15 ppm, 20 ppm, 25 ppm, 30 ppm, 35 ppm, 40 ppm, 45 ppm, 50 ppm, 55 ppm, 60 ppm, 65 ppm, 70 ppm, 75 ppm, 80 ppm, 85 ppm, 90 ppm, 95 ppm, 100 ppm, or up to 500 ppm of dissolved organic matter (DOM). In other aspects, the natural organic matter is obtained from environments typically containing or providing about 500 ppm, 1000 ppm, 1500 ppm, 2000 ppm, 2500 ppm, 3000 ppm or more DOM.

[0030] Natural organic matter is extremely complex, with thousands of compounds generally present, depending upon the source and the environmental conditions prevalent about the source. Humic substances such as Fulvic Acid (CAS Reg. No. 479-66-3) and Humic Acid (CAS Reg. No. 1415-93-6) are examples of organic complexes that are derived from natural organic matter, however, CP is chemically and biologically unique from Fulvic and Humic acid, as detailed below.

[0031] CP contains dissolved organic matter, the organic matter being formed during the process of humification as described above, such as microbial, fungicidal, and/or environmental (heat, pressure, sunlight, lightning, fire, etc.) degradation processes. Other natural or synthetic natural organic matter degradation processes may be involved or may be used. In one aspect, CP contains predominately natural organic matter that has not undergone substantial humification (e.g., partially humified natural organic matter). The amount of humification may be determined and characterized using known methods, for example, by 13C NMR.

[0032] In one aspect, CP is obtained by removing a natural organic matter from its source, optionally processing, and/or concentrating to provide a CP composition having a dissolved organic matter (DOM) concentration level of about 10×, 25×, 50×, 100×, 200×, 300×, 400×, 500×, 600×, 700×, 800×, 900×, 1000×, 1500×, 2000×, 2500×, 3000×, 3500×, 4000×, 4500×, or 5000× relative to its original source. In another aspect, CP concentrations of dissolved organic matter (DOM) concentration level can be about 7500×, 10,000×, 15,000×, 20,000×, 25,000×, and up to 50,000×. CP compositions may be adjusted such that the concentration of DOM is between about 10 ppm to about 700,000 ppm. Preferably, CP may be adjusted such that the concentration of DOM is between about 1000 ppm to about 500,000 ppm. CP compositions may be adjusted to a DOM value represented by any ppm value between 1000 ppm and 50,000 ppm, inclusive of any ppm value in 500 ppm increments (e.g., 10,500 ppm, 11,000 ppm, 11,500 ppm, 12,000 ppm, etc.) in aqueous solution. Other DOM concentrations may be used, for example, an extremely concentrated composition of between about 75,000 ppm and about 750,000 ppm can be prepared. For example, a concentrate of about 30,000× that of the original source can contain about 550,000 ppm of DOM. In certain aspects, CP compositions are approximately between about 91% to about 99% water, the remaining organic material being primarily DOM with minor amounts of alkali-, alkali earth-, and transition metal salts. In yet other aspects, the DOM of the CP composition has been dried or lyophilized in a form suitable for reconstitution with an aqueous solution.

[0033] CP compositions contain a complex mixture of substances, typically a heterogeneous mixture of compounds for which no single structural formula will suffice. Detailed chemical and biological testing has shown that CP is a unique composition both in its biological effect on plants and its chemical composition compared to Humic and Fulvic acids. Elemental and spectroscopic characterization of CP material differentiates it from most other humic-based organic complexes, such as Humic and Fulvic Acids, as further discussed below. Blending of CP compositions may be performed to provide consistency of material and to compensate for the normal variations of a naturally-derived material.

[0034] CP compositions may be applied to the seed, foliage, or to any other part of the plant or its locus. Application rate of CP can be between about 0.01 gram/hectare to about 10.0 gram/hectare dry weight, between about 0.2 gram/hectare to about 2.0 gram/hectare dry weight, between 0.3 gram/hectare to about 1.5 gram/hectare dry weight, or between about 0.4 gram/hectare to about 1.0 gram/hectare dry weight applied in the soil or as a foliar application to the foliage or the locus of the plant.