

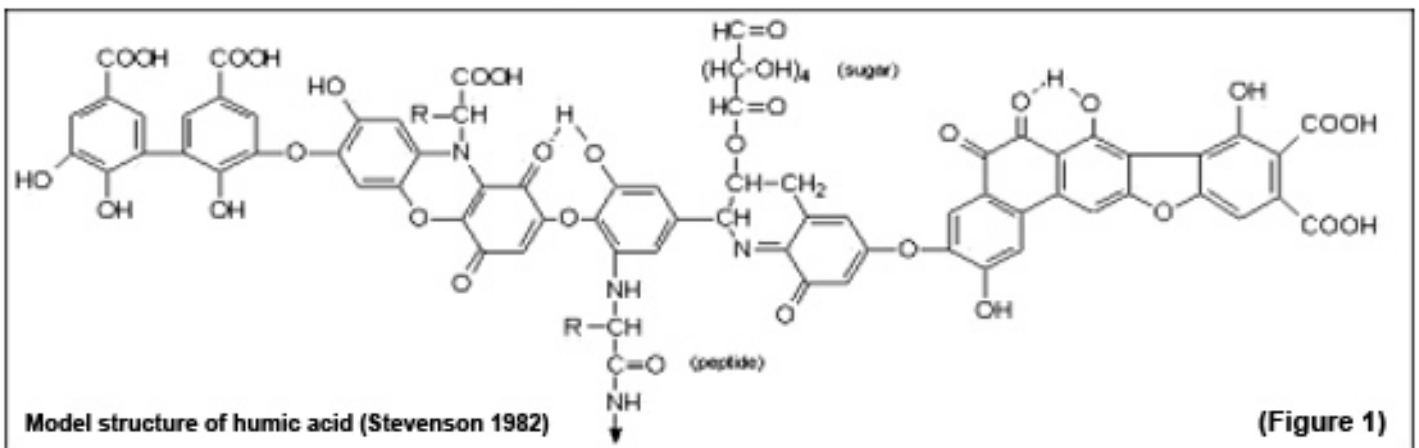
Biofeed[®] Acti-Cell Technology[®] (ACT) vs. Humic Acid – What's the difference?

A Scientific Point of View

During the last 40 years, advances in soil technology have led to the discovery of extraction methods of plant-growth compounds and nutrient facilitators known as Humic Acid, which is the major extractable component of premature coal deposits commonly referred to as Leonardite. They are tan to black in color. These naturally occurring compounds vary in composition from an average chemical formula of: C187 H186 O89 N9 S1 -to- C130 H140 O64 N9P. (Fig. 1)

Mined humic compounds or Leonardite is typically not soluble in water especially under pH 8.3. However, like most hydrocarbons these are soluble at higher pH values of pH 8.5 and above. A pH of 8.5 and higher is a very toxic pH range for all soil and plant life.

Due to low water solubility, most commercially marketed humic acids are typically extracted using chemical reactions with mineral acids and alkalis through a polymerous hydrosol-leachate process which involves mechanical grinding of the Leonardite material followed by chemical treatment with phosphoric acid, saturation with ammonium, potassium or sodium hydroxide to raise pH above 8.5, which dissolves and suspends the material in water. The resultant chemo-organic solution has exhibited a potential phytotoxic effect due to hydroxide or salt burn. Following repetitive applications, these leave behind unwanted salts in the soil and root zone. Additionally, hydroxide-soluble Leonardite based products have shown to precipitate and become immobile in the soil. Thus, product performance is lost and remains unavailable to plant roots.



Biofeed[®] with Acti-Cell Technology[®] (ACT): The Alternative to Chemically Derived Humic Acid!

Biofeed[®] ACT[®] is a dynamic alternative to mined humates. ACT is biologically generated using specific organic compounds which are transformed into unique, water soluble humic substances, L-form amino acids, enzymes and other organic compounds through a proprietary process of biological transformation. Biofeeds products are comprised of plant nutrients with exceptionally small cell structures that readily form soluble complexes as they chelate essential nutrient elements required for aerobic biological activity in soil and greater cell structure in the plant.

The organic molecules contained in Biofeed® ACT are not derived from mined ingredients nor are they contaminated with unwanted salts or heavy metals and therefore function uninhibited within the soil and plant-cell.

Further, unlike chemically derived humic compounds, Biofeed® ACT products maintain solubility long after application to all soil types. This results in improved Cation Exchange Capacity (CEC) and biodynamic salt neutralization.

Additionally, during Biofeeds's ACT production process, a variety of enzymes, biostimulants, ATP, β -Butyric Acids, amino acids, carboxylic acids and vitamins are formed which act as a substrate for beneficial aerobic biological activity within the soil profile. Biofeed® products go much further than simple "humate" products by supporting DNA replication and transcription processes by RNA within cells. This results in rapid cellular growth and metabolic activity. These elements further aid in the destruction of unwanted toxic elements found in the environment into harmless byproducts via bio-oxidation/reduction reactions. The nutritional requirements of virtually all living cells is fairly constant, Biofeed® products provide a "whole-food effect" to promote cellular health both in the plant and in the soils complex biological systems. Therefore Biofeed® ACT functions as a substrate for enhanced cellular health in the plant as it stimulates aerobic biological activity in the soil.

Maintaining Desirable Oxygen Levels: products with Biofeed® ACT contain a unique enzyme system (HDH) which effectively splits the water molecule thereby releasing these life-supporting elements vital to all living systems. Bio-oxidation and reduction reactions cannot occur in an environment that is lacking these basic elements. Biofeed® ACT provides the solution to energize the bio-environment by providing the continuous release of oxygen and hydrogen from the water molecule thereby improving the activity of high energy, life sustaining chemical and biochemical reactions.