EPR monitoring of plant degradation, humification and coalification.

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Streszczenie

Quantitative EPR measurements made with the green parts of living plants show that rapid changes in free radical activity can be observed as a result of the polluted atmosphere. Lichens are especially sensitive to sulphur dioxide and nitrogen oxides; high concentration of semiquinone radicals and, in some cases iminoxy radicals, was detected in lichen thallus. EPR investigations of city refuse composts in different stages of their maturity show distinct correlation between free radical reactivity and microbiological activity. On the other hand, living cells of some microorganisms are characterized by relatively strong free radical signals. Copper(II) sorption by living microorganisms and complexation by humic substances results in decrease of the concentration of semiquinone radicals.

The processes of compost maturation, humification, formation of organic-clay complexes, coalification, etc., are associated with a variety of free radical reactions. As the some organic groups can act as natural spin traps, the formed relatively stable radicals are used for monitoring of the processes.