

TITLE: EFFECT OF VEGETABLE EXTRACTS OF *Allium sativum* and *Cymbopogon nardus* IN THE SOIL MICROBIOTE

AUTHORS: DOMINGOS, M.M.; MELLONI, R.; FREITAS, I.C; FARIA, V.L;

INSTITUTION: UNIVERSIDADE FEDERAL DE ITAJUBÁ, ITAJUBÁ, MG (AVENIDA BPS,1303, CEP 37500-903, ITAJUBÁ – MG, BRAZIL)

ABSTRACT:

Brazil is the largest consumer of pesticides in the world. The massive use of these chemical inputs has been bringing incalculable damage to the environment and humans for several decades. In this context, an alternative that has been taken up for pest and disease control is the use of secondary metabolites present in some plants. Various substances from intermediate or final products of the secondary metabolism of these plants can severely interfere with the metabolism of other organisms, causing variable impacts. In many cases, it is assumed that these are innocuous. However, they may present antimicrobial action and little is known about their effect on the environment, especially on the soil microbiota. The present work evaluated the behavior of the microbial activity and biomass and the metabolic quotient (qCO_2) of the soil under the effect of two extracts used in agriculture to control pests and diseases, aqueous extract of *Allium sativum* and *Cymbopogon nardus*. Microbial activity was determined by CO_2 uptake, microbial biomass quantification by irradiation/incubation method and qCO_2 by the relationship between activity and microbial biomass. Soil samples were exposed to four extracts concentrations, 2.5, 5, 7.5 and 10%. The experimental results showed that the microbial activity increased as the extracts doses increased, indicating that the soil microbial biomass directs more energy to the cellular adaptation in response to the presence of the components of the extracts, which was indicated by the increase in the release of CO_2 . For the extract of *A. sativum*, which present fungicidal action, the increase in respiration can be attributed to the stress caused to the fungal population of the soil in response to the extract. While in soil samples contaminated with *C. nardus* extract there was a marked decrease in the biomass formation, in the soil samples enriched with the extract of *A. sativum* the estimated carbon of the biomass of the microorganisms had a fall from the concentration of 7.5%. The qCO_2 increased significantly as the extracts concentrations were higher in the soil, evidencing a probable disturbance in the microbial metabolism. It is concluded that the extracts used in this work cause disturbances in microbial activity and biomass and metabolic quotient (qCO_2), bioindicators of soil quality related to its microbiote.

Keywords: microbial respiration, soil micro-organisms, Agroecology

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