

STRUCTURAL CHANGES ON CITRONELLOL INDUCED BY GAMMA RADIATION

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Abstract

Significant progress has been made in the synthesis pathways of natural of terpenoids recently and some application are being developed based in polymers containing these bioactive compounds. However, no attention has been given to the use of ionizing radiation as a pathway synthesis. Structural changes in pure citronellol after exposure to different doses of gamma radiation were elucidated by spectroscopic techniques and molecular modelling methods. The citronellol samples (97% purity) were irradiated in an MPX- γ 30 installation (^{60}Co , E = 1.25 MeV), absorbing in a dose range from 1.45 to 10.02 kGy. Citronellal and hydroxycitronellal compounds were detected in the irradiated samples. Some mechanisms of radiolytic transformations for citronellol were proposed and modeled at semiempirical quantum chemical level. These results provide the basis for the possible development of new synthetic pathways for close structurally related compounds and its polymers, based on the use of gamma irradiation.

Key words: gamma radiation, citronellol, monoterpenes, organic compounds, radiolysis.