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Abstract.

Both auto-radiolysis and gamma irradiation induce transformations in solid powdered $Ca^{14}CO_3$. Liquid chromatography followed by liquid scintillation counting were used to identify eight compounds after aqueous dissolution of the irradiated samples. The distributions of the radiolytic products depend on the gamma dose or the auto-radiolysis time. Formic acid is the principal product, both originating from the CO_2^- ion radical. Secondary reactions produce other compounds such as glycolic, glyoxylic, acetic and malonic acids, formaldehyde and methanol, with the yields depending on the total dose.

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