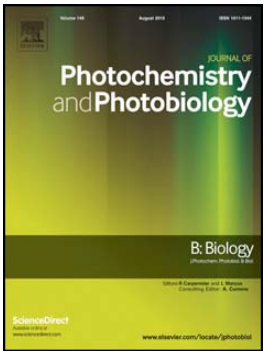

Radio-protective effect of some new curcumin analogues

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ABSTRACT

In the present study, novel symmetrical curcumin analogues (**2**-**7**) have been synthesized by substituting the phenolic OH of curcumin with different linkers providing additional keto-enol tautomerism, very essential for radioprotective activity. The structures of the synthesized compounds (**2**-**7**) were elucidated by elemental analysis, IR, ^{1}H-NMR, ^{13}C-NMR and mass spectral data and were found consistent with the assigned structures. The curative effect of these new compounds, against the oxidative stress due to exposure of rats to the whole body γ-irradiation (7 Gy) was investigated. Gamma-irradiated rats exhibited elevations of ALT, AST activities, urea, creatinine, triglycerides, total cholesterol, malondialdehyde (MDA), nitric oxide (NO), Interleukin-6 (IL-6), Tumor Necrosis Factor-α (TNF-α) and Nuclear Factor-kappa B (NF-κB) levels. Contrariwise, the total protein, albumin, total calcium level, SOD, CAT, GSH-Px, GST activities and GSH content were decreased. Treatment of gamma-irradiated rats with the new curcumin analogues (**2**-**7**) showed significant amelioration in the *in-vivo* antioxidant status, liver and kidney functions, as well as the anti-inflammatory markers (IL-6, TNF-α and NF-κB). Inhibition of NF-κB could be responsible for the improvement of the antioxidant and anti-inflammatory status in gamma-irradiated animals, by down-regulation of IL-1β and TNF-α level.