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Coclastogenic Effects of Sodium Arsenite on Chinese Hamster Ovary Cells (CHO9) and Primary Human Fibroblasts (VH25)

Radha Saraswathy

Department of Biosciences, Vellore Institute of Technology Deemed University, Vellore 632 014, Tamil Nadu, India
E-mail: r_saraswathy@yahoo.com

KEYWORDS Sodium arsenite; UVB; methyl methanesulfonate; mitomycin C; coclastogenicity; Chinese hamster ovary cells (CHO9); primary human fibroblasts

ABSTRACT The coclastogenic effects of sodium arsenite (SA) at its non-cytotoxic concentrations of 1.5µM and 3µM were studied in combination with three different types of known clastogenic agents namely ultra violet radiation (UVB, 280-320nm), methyl methanesulphonate (MMS) and mitomycin C (MMC) at varying doses/concentrations. The end points studied were the frequencies of induced sister chromatid exchanges (SCEs) and micronuclei (MN) in Chinese hamster ovary cells (CHO9) and primary human fibroblast cells (VH25). In general post treatment with SA produced synergistic increases in clastogenicity with all the three clastogens. Very few exceptions were found where increases in clastogenicity was not synergistic. In CHO9 cells post treatment with SA resulted in increased synergistic effects in the frequencies of SCEs at the lower dose/concentrations of UVB, MMS and MMC. In VH25 cells post treatment with SA produced synergistic effects in MMS and MMC induced damage in all the treatments. A similar synergistically increased frequency in MN's at the higher doses in UVB and at the lower concentrations of MMC. A non synergistic increase in MMS after post treatment with SA were observed in CHO cells. In VH25 cells, MMS in all combinations produced a synergistic effect after post treatment with SA. In general, these results demonstrate the coclastogenicity of SA with UVB, MMS and MMC treatments in CHO9 and VH25 cells.