



Apoptosis and morphological alterations after UVA irradiation in red blood cells of p53 deficient Japanese medaka (*Oryzias latipes*)

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Abstract:

Morphological alterations in red blood cells were described as hematological bioindicators of UVA exposure to investigate the sensitivity to UVA in wild type Japanese medaka (*Oryzias latipes*) and a p53 deficient mutant. The fewer abnormal red blood cells were observed in the p53 mutant fish under the control conditions. After exposure to different doses of UVA radiation (15 min, 30 min and 60 min/day for 3 days), cellular and nuclear alterations in red blood cells were analyzed in the UVA exposed fish compared with non-exposed controls and those alterations included acanthocytes, cell membrane lysis, swollen cells, teardrop-like cell, hemolyzed cells and sickle cells. Those alterations were increased after the UVA exposure both in wild type and the p53 deficient fish. Moreover, apoptosis analyzed by acridine orange assay showed increased number of apoptosis in red blood cells at the higher UVA exposure dose. No micronuclei but nuclear abnormalities as eccentric nucleus, nuclear budding, deformed nucleus, and bilobed nucleus were observed in each group. These results suggested that UVA exposure induced both p53 dependent and independent apoptosis and morphological alterations in red blood cells but less sensitive to UVA than Wild type in medaka fish.

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