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13,17-BIS(1-CARBOXYPROPIONYL)CARBAMOYLETHYL-3,8-BIS(1-DECANYLOXYETHYL)-2,7,12,18-TETRAMETHYL-PORPHYRINATO GALLIUM (III) IN THE PREVENTION OF HUMAN LEUKEMIA CELLS PROLIFERATION

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BACKGROUND/AIMS: We controlled the growth of leukemia cells by LED light irradiation in the presence of the 13,17-bis (1-carboxypropionyl) carbamoylethyl-3,8-bis (1-decanyloxyethyl) -2,7,12,18-tetramethyl-porphyrinato gallium (III). We analyzed the mechanisms of the decreasein cell proliferation.

METHODS: We cultured the human leukemia cell line KG-1 in the presence of 13,17-bis(1-carboxypropionyl)carbamoylethyl-3,8-bis(1-decanyloxyethyl)-2,7,12,18-tetramethyl -porphyrinato gallium (III) and irradiated the 525nm light. We analyzed the proliferation of these cells and observed them under the microscope.Caspase activity was observed.

RESULT: 525nm green light induces a reduction in KG1 cell proliferation effectively inthe presence of 100nM 13,17-bis(1-carboxypropionyl) carbamoylethyl -3,8-bis(1-decanyloxyethyl) -2,7,12,18-tetramethyl-porphyrinato gallium (III). We observed the fragmentation of the nucleus of these cells morphologically. We found that the activity of the caspase-3 was increasing in these cells.

DISCUSSION/CONCLUSIONS: These findings suggest the possibility of photodynamic purging of leukemia cells using 13,17-bis (1-carboxypropionyl) carbamoylethyl-3,8-bis (1-decanyloxyethyl) -2,7,12,18-tetramethyl-porphyrinato gallium (III).

Key words: Leukemia cell, PDT, Apoptosis