synexa
LIFE SCIENCES

# Effects of Ionized Silver (IM/Q610-419-01A) on 2 melanoma cell lines.

**Starlight Laboratories**

**Ionized Silver**

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## Product

The product under testing was delivered directly to Synexa Life Sciences (Pty) Ltd as a ready-made solution and this was indicated as de-ionized water containing 18.012 ppm (18.012 mg/l) ionized silver (Ag). In parallel, a bottle containing only the de-ionized water was made available as a control for all experiments.

## Methodology

The ionized Ag preparation was evaluated for its effect on 2 melanoma-type cancer cell lines at three different concentrations which included 4.503 ppm (25%), 2.252 ppm (12.5%), and 1.126 ppm (6.25%). As with previous experiments we were restricted to a highest final concentration of 4.503 ppm. At higher concentration interference with cell activity occurred due to the aqueous nature of the sample and the control sample.

The two cell lines used for testing the potential anti-cancer properties of ionized Ag were MeWo and BE11. The bio-assay involved flow cytometric analysis of the amount of dead cells (PI+) present after 1 day incubation in the presence and absence of Ionized Ag at the above mentioned concentrations. The potential of each concentration of ionized Ag to induce cell death (cytotoxic) was determined by comparing the amount of dead cells to that of the corresponding water control sample. Cell proliferation was also monitored by flow cytometry by tracking the migration of CFSE during cell division. A representative plot of the results is shown in figure 1 hereunder. If the sample is able to induce direct cell death after incubation, the cells would be measured in region R4 due to the uptake of the dye used (PI). Cell proliferation (cell division) would be signified by cells migrating from region R1 to region R2 due to the diluting effect of CFSE caused by the cells dividing.

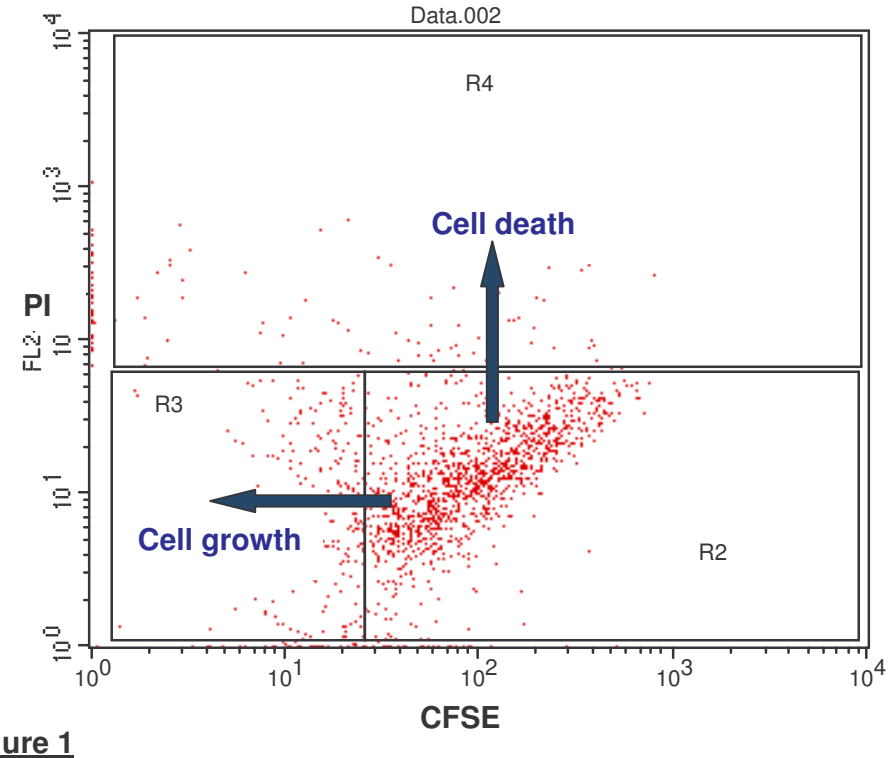


**Figure 1**

## Results

The effects of the product on each cell line are tabulated below. The amount of dead cells is expressed as a percentage of total cells and will be detected in region R4 (Fig. 1) and the proliferating cells are expressed as percentage of total cells and will be detected in region R3 (Fig.1). An increase in the amount of dead cells will cause cells to migrate to region R4 and proliferating cells will migrate to region R3 (Fig 1).

| | MeWo | | | |
|---|---|---|---|---|
| | Cell Death (% PI+) | | Cell Proliferation (% CFSE+) | |
| | Ionic Ag | H2O Control | Ionic Ag | H2O Control |
| 25% | 2.14 | 2.49 | 17.65 | 16.17 |
| 12.50% | 3.52 | 3.28 | 15.47 | 22.97 |
| 6.25% | 3.58 | 2.75 | 15.77 | 17.11 |
| Negative Control | 5.36 | | 15.31 | |

| | BE11 | | | |
|---|---|---|---|---|
| | Cell Death (% PI+) | | Cell Proliferation (% CFSE+) | |
| | Ionic Ag | H2O Control | Ionic Ag | H2O Control |
| 25% | 0.05 | 0.66 | 12.26 | 22.96 |
| 12.50% | 0.81 | 0.56 | 15.67 | 13.88 |
| 6.25% | 0.74 | 0.71 | 19.66 | 30.65 |
| Negative Control | 0.49 | | 20.88 | |

## Conclusion

- Overt cell death is not evident with both cell lines (irrespective of ionized Ag concentration)
- It appears that cell proliferation is decreased in the presence of the ionized Ag which implies a cytostatic effect rather than a cytotoxic effect.
- Regular application of the product directly onto lesions may lead to eventual death of tumour cells if the cellular proliferation is inhibited long term.
- Lack of toxicity to these cell lines may also be seen as a positive confirmation of the lack of general toxicity by the ionized Ag preparation used in this study.

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Patrick Bouic
Chief Technical Officer

Wessel Kriek
BioActivity Screening Manager