



Characterizing the effects of benzyl-amino alcohol on cell growth, viability, and migration of HEK, MCF7, and SUM159 prostate and breast cancer cell lines

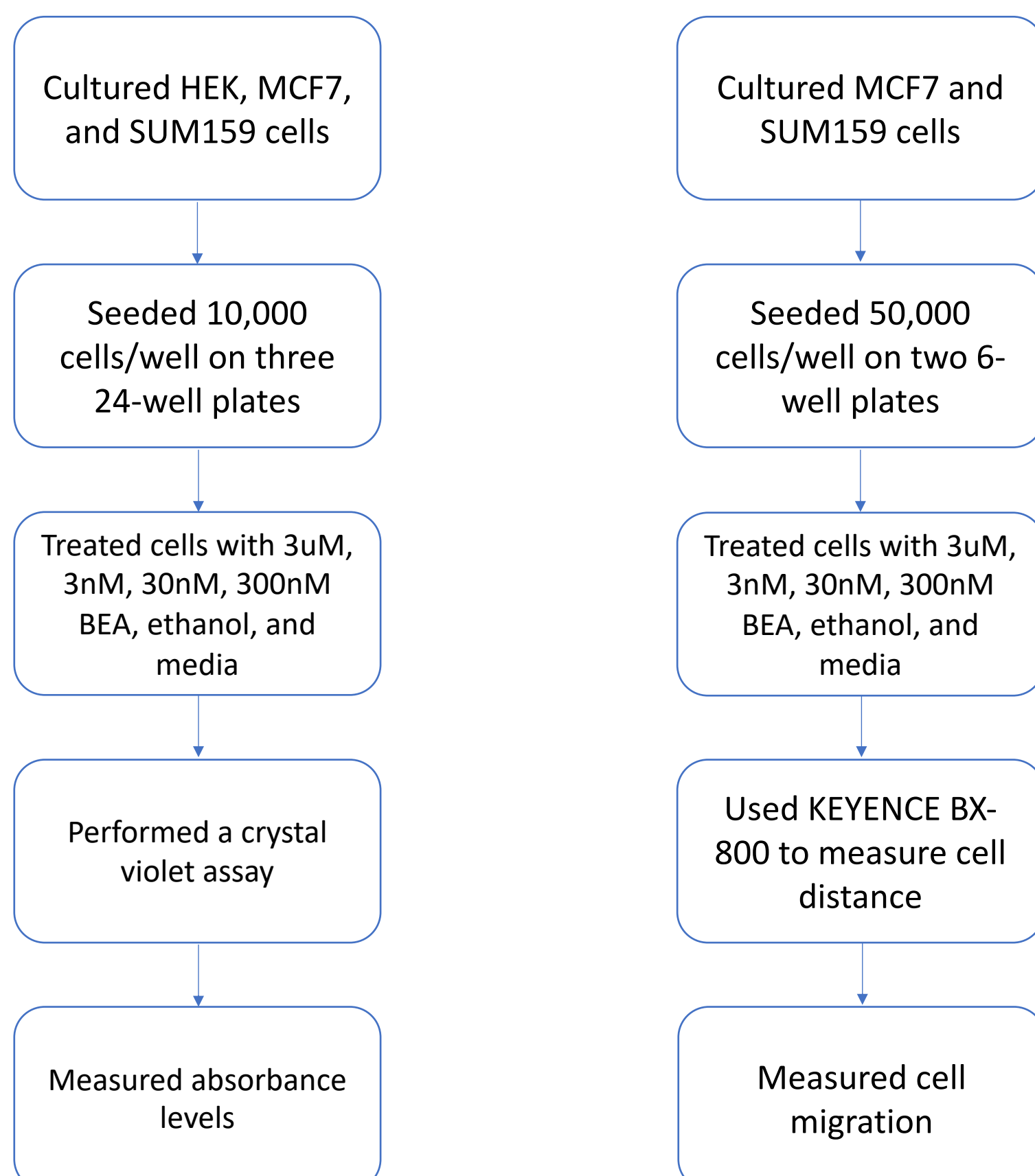
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Abstract

- Breast cancer is the leading cause of death around the world.
- Immunotherapies are not as effective in tumors like triple-negative breast and prostate cancer because of the sophisticated pathogenesis of both cancer types.
- Some treatment options to help combat this phenomenon are biological compounds like benzyl-amino alcohols.
- The SUM159 line resembles late-stage cancer, specifically triple-negative breast cancer.
- The MCF7 line is normal breast cancer, providing an early-stage cancer model.
- The HEK cell line kidney cells, modelling healthy cells.
- What effects does benzyl-amino alcohol have on early and late-stage breast cancer cells?

Methods



Results

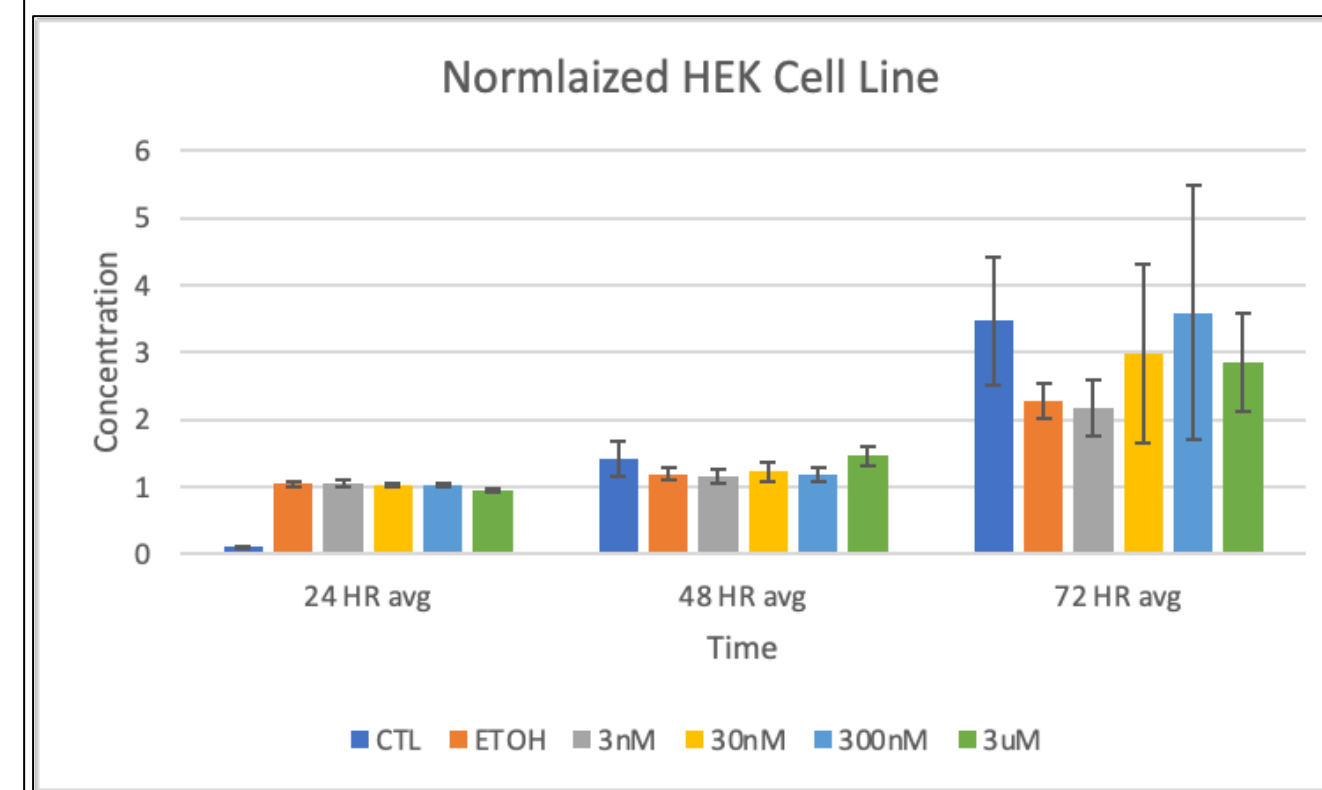


Fig. 1: HEK cell concentration in relation to time, with each time interval indicates the average concentration normalized to the three 24-hour control plates.

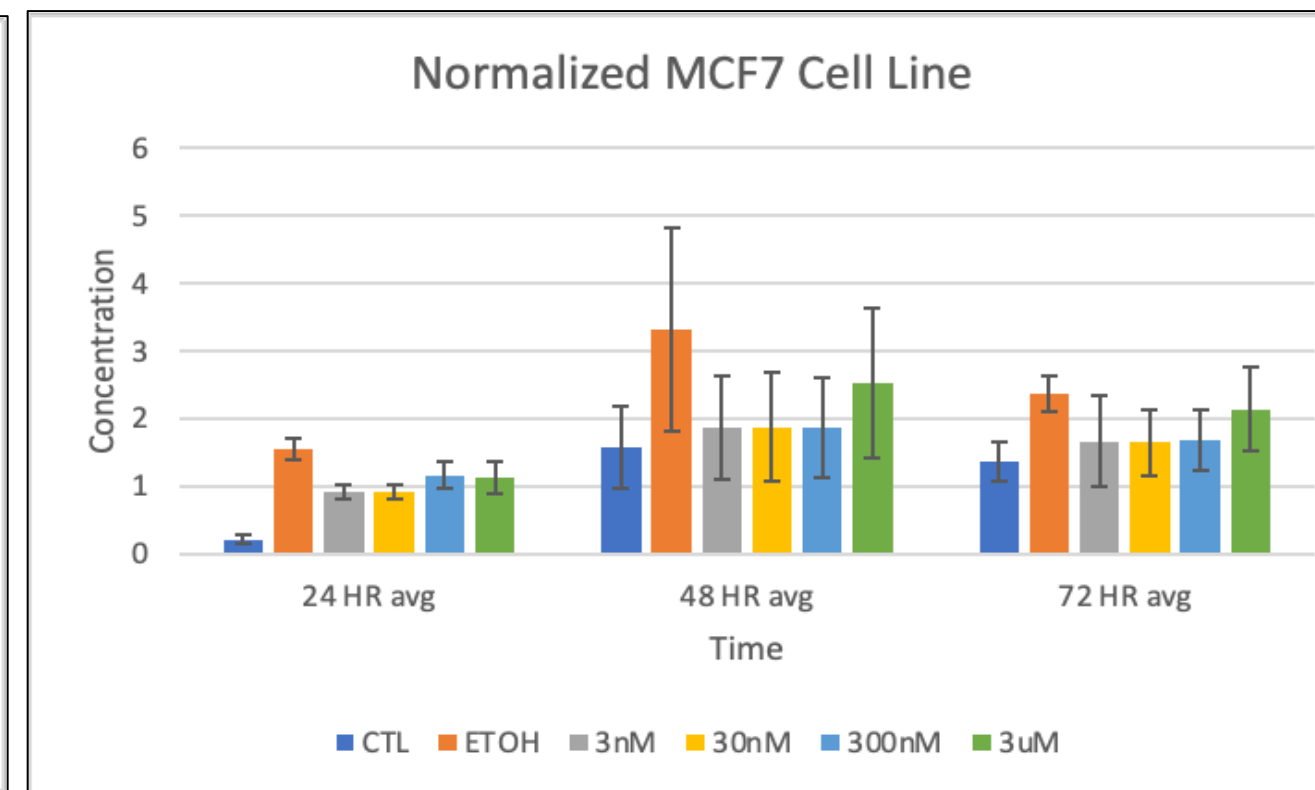


Fig. 2: SUM cell concentration in relation to time, with each time interval indicates the average concentration normalized to the three 24-hour control plates.

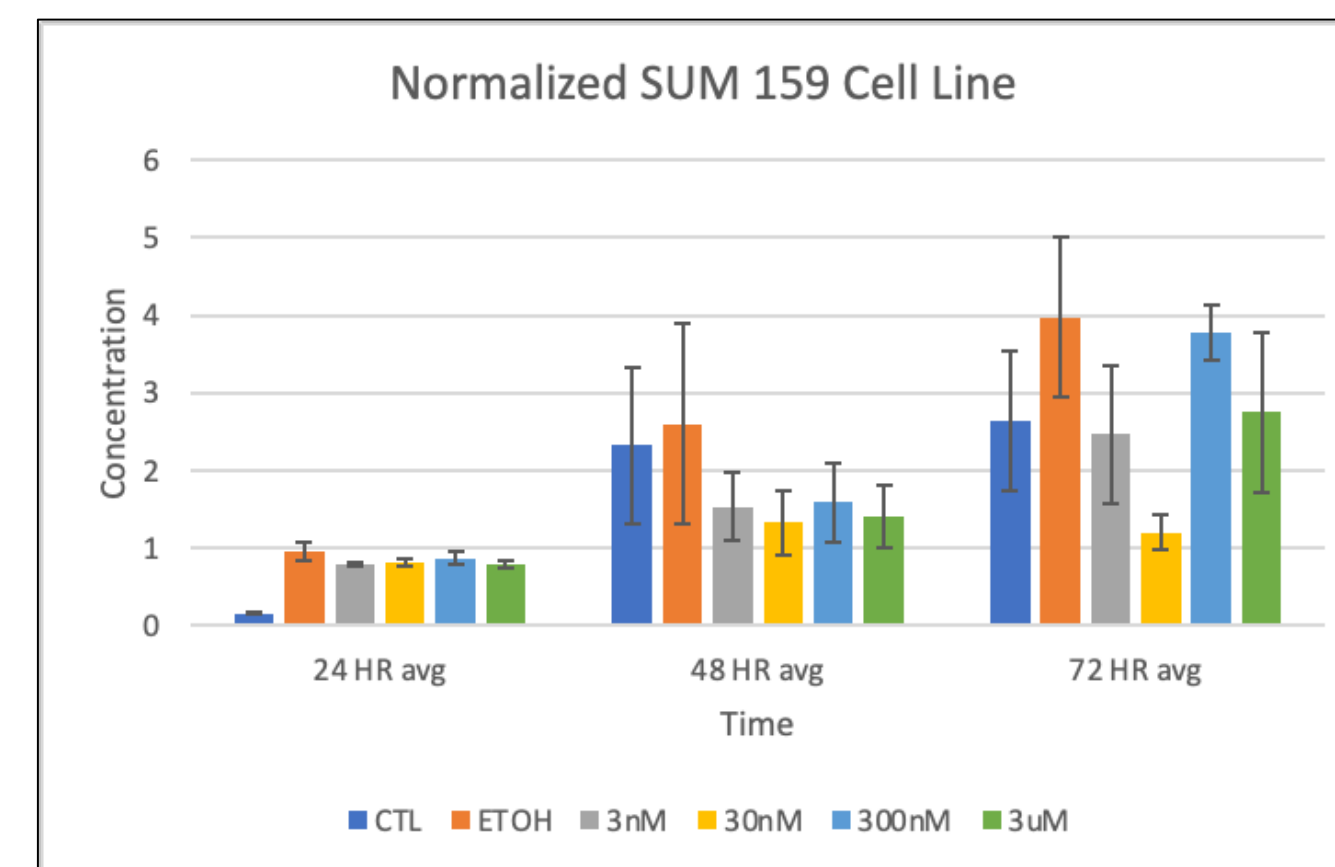


Fig. 3: MCF7 cell concentration in relation to time, with each time interval indicates the average concentration normalized to the three 24-hour control plates.

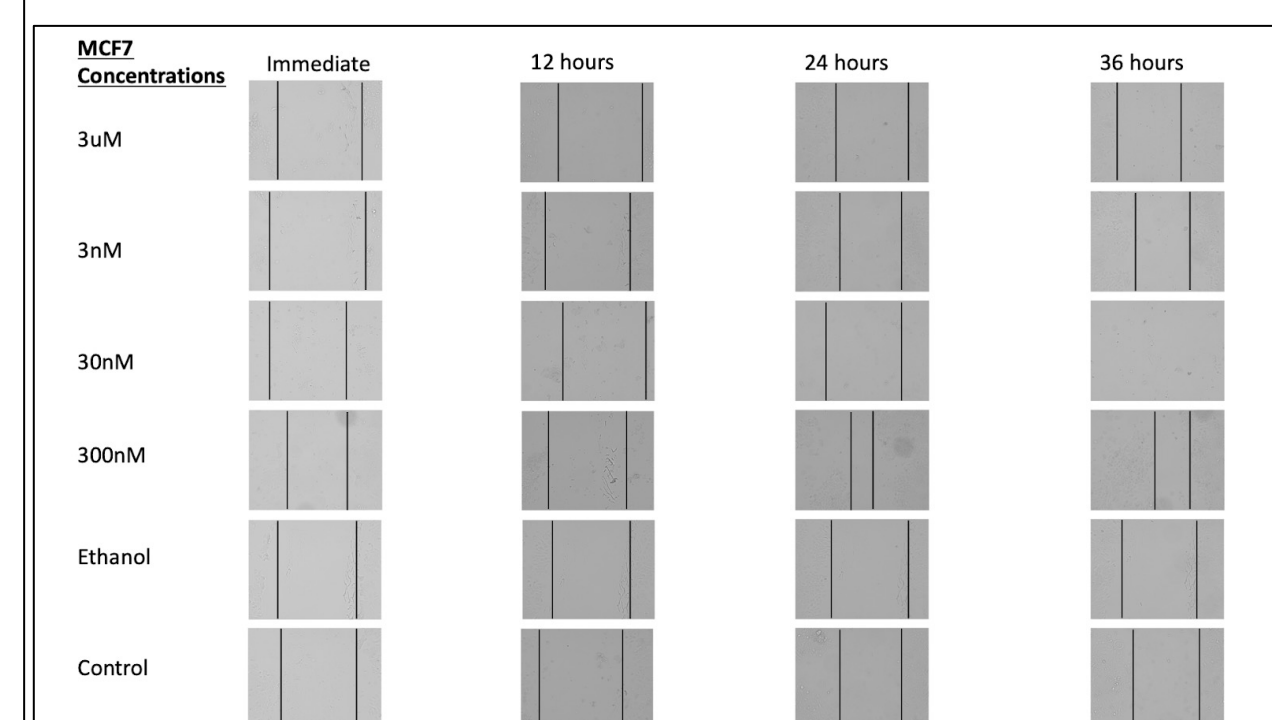


Fig. 4: Depicts cell migration of the MCF7 cell line in different concentrations of benzyl-amino alcohol at four different time intervals.

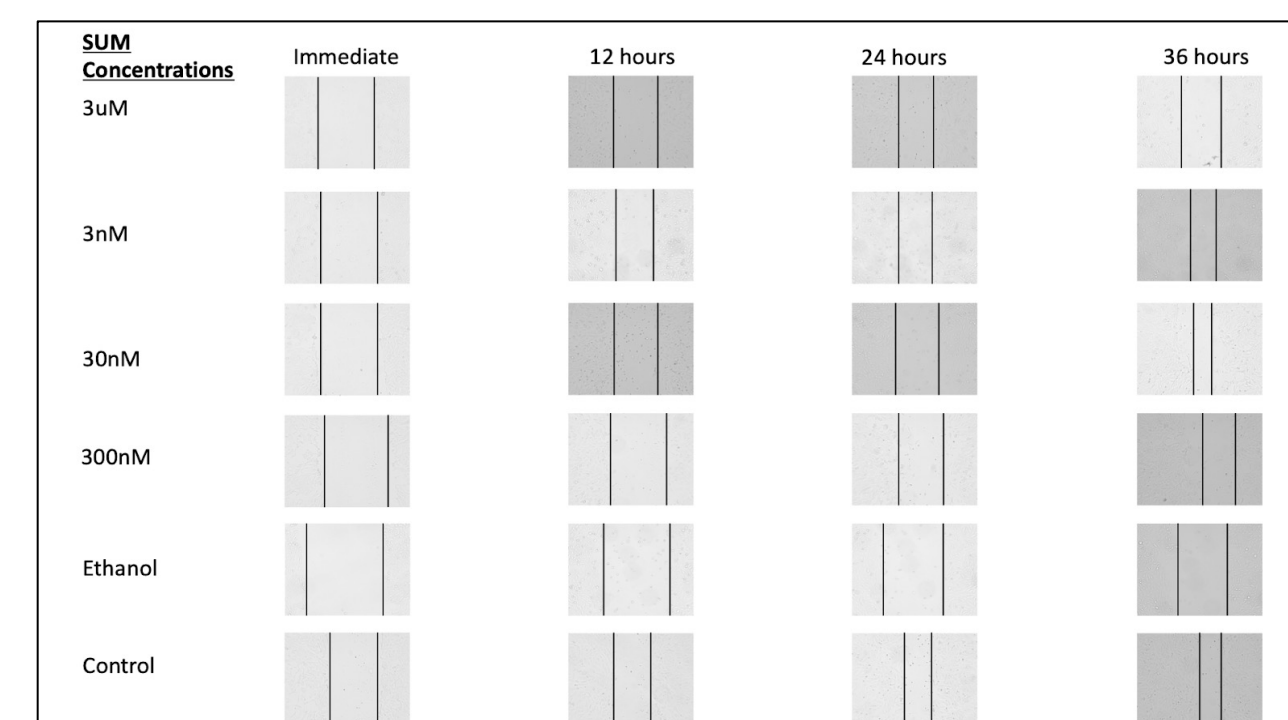


Fig. 5: Depicts cell migration of SUM cells in different benzyl-amino alcohol concentration at four different time intervals.

Results Continued

Figures 1-3 illustrate the average concentration of cells in three 24-well plates in comparison to the control group. There is no significant difference in absorbance levels between healthy and cancerous cells during the 24-hour incubation period, but in the 48-hour incubation period there is a slight increase in absorbance levels for SUM and MCF7, specifically in relation to ethanol concentration. HEK cells express similar trends in both 24-hour and 48-hour incubation periods while the 72-hour incubation period reveals an overall increase in absorbance across all concentrations. Notably, MCF7 cells display a decrease in absorbance levels, with the highest decline observed in the ethanol group. Conversely, SUM cells exhibit the highest absorbance levels during the 72-hour incubation period, with significance in the 30nM concentration. In **Figures 4 and 5**, the migration of MCF7 cells appears to be less pronounced than that of SUM cells in all concentrations. The SUM cell line consistently exhibits greater migration than MCF7 cells but do not converge at any point.

Conclusion

Higher absorbance levels is directly proportional to an increase in cell concentration. This was observed in the HEK cells, while the SUM and MCF7 lines absorbance levels decreases. 30nM is the only significant concentration within the SUM cell lining. Reducing cancer cells is favorable for continued research. Based on the results, we can conclude that benzyl-amino alcohol not only allows healthy cells to survive and grow but mitigates migration and cell growth in SUM and MCF7 cells.

Acknowledgments

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