Potential Impacts of Kratom (Mitragyna speciosa) to the Viability of SIM-A9 (Mouse) Brain Cell Cultures

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Kratom is a type of plant within the coffee family found in Thailand and the surrounding Indochina area. Kratom has been used in the area for thousands of years as a natural pain reliever. Commonly smoked in a pipe, the plant's leaves contain a chemical compound called mitragynine, which reacts with the brain's serotonin and dopamine receptors to produce an opioid-like "high," (Yang et al, 2023). With the increased availability in some states of THC-containing products and the continued strict regulations in other states restricting access, the utilization of kratom is increasing - both for its potential medical and recreational uses. (Johnson et al, 2020). However, there is no medical oversight into this compound as it is not listed on any federal drug classification schedule and since it is often sold as an herbal remedy, there is no FDA regulation either. Readily available in retail shops, this unregulated and seldom studied compound poses a potential risk for individuals who may use it with no knowledge of the inherent side effects of the drug compounds. (Ellis et al, 2020). Chemicals found in kratom may be capable of negatively impacting the growth and development of a brain cell. This could point to developmental and health issues for individuals utilizing kratom as a recreational or medicinal product absent any medical studies. Data showed that exposure to kratom extracts caused a general reduction in cell numbers from control values. This was true in both water and ethanol extracts. Water extracts showed a significantly lower cell count across all concentrations, except the 2X extract which was only slightly lower than the control. All ethanol extracts were below the ethanol control, though the count reduction was less than those seen in the water extracts.

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