

## PLANT EXTRACT INDUCES LEUKEMIA CELLS (HL-60) DEATH

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**Abstract:** Leukemia is a cancer of the white blood cells that typically begins in the bone marrow. Leukemia can affect erythrocyte (red blood cells), lymphocytes (white blood cells) and platelets. There are four types of leukemia: acute myeloid leukemia (AML), chronic myeloid leukemia (CML), acute lymphocytic leukemia (ALL), and chronic lymphocytic leukemia (CLL). The two subtypes for leukemia are chronic and acute. Current treatment for leukemia includes chemotherapy, radiation, drugs, and bone marrow transplant. Acute myeloid leukemia occurs when the bone marrow begins to make blast cells that have not completely matured. The most widely used treatment for AML is chemotherapy. Roughly, 2 out of 3 patients that receive chemotherapy due to AML goes into remission. Side effects of chemotherapy includes fatigue, hair loss, mouth sores, infection, anemia, nausea and vomiting. The use of chemotherapy over an extended period of time can also cause damage to the heart, liver, bladder, and other organs. Patients diagnosed with AML may have changes in the c-KIT gene/ and or mutations in the FLT3 gene. Although, AML affect both kids and adults, it is more common in adults. AML also affects males at higher rates than females. We hypothesized that the treatment of HL-60 cells with the plant extract xanthohumol, will trigger genes in the cell cycle that will initiate HL-60 cell apoptosis. In this present study, we used leukemia cells (HL-60) as a model to study AML. The HL-60 cell line was adapted from a female patient with acute myeloid leukemia. To test this hypothesis, we performed the MTT assay. The HL-60 cells were exposed to different concentrations of xanthohumol. Cells were housed in a 96 well plate and were treated with the plant extract at concentrations of 0.5, 12.5, 25, and 50. Data obtained from the MTT essay indicated that the HL-60 cells had a strong response to the plant extract. After a time lapse of 24 hr., the plant extract significantly reduced the amount of viable cells. The control group of the HL-60 cells were set to 100 percent. At the concentration of 5 um, cell viability was reduced to 98 percent. At the concentration of 12.5 um, cells viability was reduced to 83 percent. At 25 um concentration cell viability is at 84 percent. At 50 um concentration cell viability is at 53 percent. Cells at 100 percent viability were very confluent, cells were large in size and clustered. Cells at 98 percent viability were smaller in size and less clustered. Cells at 83 percent viability were flat, smaller, elongated, and less clustered. Cell at 84 percent viability was the same as cells at 83 percent viability. Cells at 53 percent viability were small, non-clustered, and harder to view. These data supports that this plant extract induces cell death of HL-60 cells.

**Key words:** Leukemia, acute myeloid leukemia, plant based-therapy, HL-60 cells

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