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VEGF signaling during angiogenesis: A preliminary study using zebra fish as model organism

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Angiogenesis is the process by which new blood vessels form from the body of the pre- existing blood vessel. Studying angiogenesis has been made possible due to the transparency, developmental speed, genotoxicity screening of the zebra fish embryo. This study aims to prove the effectiveness of the prematurely ended phase III cancer drug which is known to inhibit angiogenesis, SU5416 (semaxinib by Sugen Inc.) and a chemical compound which is known to induce hypoxia, NECA (5'-N-ethyl carboxamide adenosine). Treating the zebra fish embryos with SU5416 has shown morphological anomalies like scoliosis and decreased blood vessel formation. Embryos treated with NECA did not exhibit any abnormalities. The embryos treated with combined effect of NECA and SU5416 exhibited only scoliosis. With this, SU5416 is known to inhibit blood vessel formation at a morphological level but also has teratogenic effects. Gene expression studies were done by extracting genes from the drug embryo tissue. The genes, *VEGFR2* (Vascular endothelial growth factor receptor-2) and *VEGF-A* (Vascular endothelial growth factor-A) were studied by isolating the mRNA and amplified using reverse transcriptase-PCR technique. SU5416 binds with the Tyr1175 site of the *VEGFR2* by inhibiting it from further angiogenic pathway. This study proved the inhibition of angiogenesis by SU5416 even under the presence of an angiogenesis inducer.

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