



**CALIFORNIA STATE SCIENCE FAIR
2012 PROJECT SUMMARY**

Name(s) Teri Lambros	Project Number S0511
Project Title The Anticancer Effects of Certain Dietary Supplements through the Inhibition of NF-kB	
Abstract Objectives/Goals This work evaluated the anticancer properties of dietary substances such as curcumin and Si-Wu-Tang (SWT) by measuring the activity of NF-kB in human cell lines. Our hypothesis is that certain dietary substances such as curcumin and SWT lower the activity of NF-kB, thus have anticancer properties. Methods/Materials The human cell line HEK 298 was used. The cells were cultured and transfected with a plasmid that carried both the NF-kB and luciferase genes. The transfected cells were induced with TNF-alpha (except of the negative control group) and treated with curcumin or SWT. The activity of luciferase was measured using a commercial luciferase assay system. The groups were as follows: Group 1, non-induced non-treated cells (negative control). Group 2, cells induced with TNF-alpha and non- treated (positive control). Group 3, cells induced with TNF-alpha and treated with 40ug/ml curcumin. Group 4, cells induced with TNF-alpha and treated with a high concentration (256ug/ml) of SWT. Group 5, cells induced with TNF-alpha and treated with a low concentration (26ug/ml) of SWT. For each group N=6. Results The average luciferase activities were, 39.3, 73.8, 42.2, 43.5, 61.3 for the negative control, positive control, curcumin, high SWT concentration and low SWT concentration groups, respectively. The luciferase activity of the positive control group was significantly higher compared to the negative control, curcumin and high SWT concentration groups. Thus the activity of NF-kB was significantly lower in cells treated with curcumin or high SWT concentration. Conclusions/Discussion Cells induced with TNF-alpha only and non-treated showed high luciferase activity which translates to high NF-kB and carcinogenic activity, whereas cells treated with curcumin or high concentration of SWT even though were induced with TNF-alpha showed a significantly lower NF-kB activity compared to the positive control. These results indicate that curcumin and high concentration of SWT reduce the activity of NF-kB and have anticancer properties. We continue testing more dietary substances.	
Summary Statement We evaluated the anticancer activity of dietary substances such as curcumin and Si-Wu-Tang by measuring the activity of NF-kB in a human cell line.	
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