Vitamin Enhanced Agglutination

Leeder, Victoria (School: Eastern High School)

Vitamins have long been said to aid the body in fighting the worst of infections; by measuring agglutination patterns, the efficacy of vitamins can be observed and quantified. Using Salmonella antigens and antibodies, this research determined the hypothesis that vitamin C at a 100 mg/mL concentration would cause the greatest increase in efficacy to be correct. The null hypothesis that the tests with the vitamins showed no significant difference to the test without the vitamins was rejected. Efficacy was measured by recording the highest dilution of antiserum at which agglutination occurred for two concentrations of three vitamins and comparing the results to the control. The control was established by mixing the antiserum with the antigen and substituting a saline solution for the vitamin solutions. Two-factor ANOVA test with replication displayed significance ($p=5.4x10-8$) for the comparison of vitamin and control . No significance was found for concentration or interaction between vitamin and concentration ($p=0.10$ and $p=0.12$, respectively). A one-way ANOVA and Tukey-Kramer test found that the variable causing significance was vitamin C. Therefore, vitamin C had a significant impact on the efficacy of the antibody and led to greater agglutination overall even when fewer antibodies were present.

Awards Won: