BLOOD ALCOHOL IN NON-DRINKERS

(This study was initiated by the following experience: a number of years ago young friend of the author's was picked up on suspicion of driving under the influence. He had been to a party and was taking his date home. When stopped by the police, a blood alcohol level was obtained that indicated that he had a low level of alcohol in his blood, but not over the .050 g% level. Levels less than .050 g% have traditionally been considered proof of sobriety in court. His court case was dismissed. Nevertheless, his mother was greatly distressed by the finding of "some alcohol" in his blood. She had raised her son to abstain from drinking alcohol according to the family's religion. The author questioned him, his date, and others at the party, and was convinced that he was truthful: that he had in fact consumed no alcoholic beverage. What he HAD done, is to eat quite freely of cake, ice cream, and soft drinks, all of which are high in sugar. The author did the following study, which confirmed that fermentation processes in the gastrointestinal tract can produce positive blood alcohol test results even though they have not consumed ethyl alcohol.)

Twenty-one (21) individuals known not to use alcohol were tested. The same chemical method used by the crime lab was used for this study. This test relies on a chemical reaction that can oxidize ethyl alcohol as well as reducing substances that occur in blood. The chemical test achieves specificity for alcohol by the laboratory technician's careful control of the reaction time of oxidation applied to each specimen. In this way false-positives from interfering reducing substances are minimized. Blood alcohol results were determined on treated specimens by standard spectrometric analysis.

Five blood samples were obtained from each subject at the following times: before breakfast, mid-morning, before dinner, mid-afternoon, and about 7 PM.

There developed from our laboratory study clearly 4 categories, A, B, C and D, of blood alcohol levels corresponding with the meal patterns of the 21 individuals tested:

(A) Six of the individuals ate no between-meal snacks, no complex mixtures, and a limit of three dishes at each meal with bread and spread. These persons took only two meals daily. These 6 individuals showed the lowest blood alcohol levels, a sum of the five specimens reaching .024 g%, or an average of slightly less than .005 g% per specimen. The range of the sums for the five specimens was from .015 -.024 g% from these 6 individuals.

(B) Thirteen individuals also ate no between-meal snacks, but had complex mixtures at two meals, and a total of seven dishes with bread and spread. One of these individuals had a small evening meal. The range of sums was from .027-.050 g% or .010 g% as the highest per specimen level.

(C) One individual with hypoglycemic syndrome, but with a meal pattern similar to the 6 having a low level, showed .088 g% as a sum for his 5 specimens, or slightly less than .018 g% as an average specimen level.

(D) The highest level obtained was in one individual who ate between-meal snacks, complex mixtures, eight dishes at meals, and three or more meals daily. The level was .236 g% for the sum of 5 specimens, or an average level of .047 g% per specimen level.

We found that the blood alcohol test result was most likely to be elevated in the specimen taken before 6:30 AM or after 7 PM. This would seem to indicate that physical activity might play a factor in blood alcohol levels, either in their formation or in their elimination.