"The Junk Food Connection" A Study Reveals Alcohol and Drug Life Styles Adversely Affect Metabolism and Behavior

Alfred F. Libby, Ph.D.[1], Charles R. Starling, M.D.[2], Fleming H. Josefson, M.A.[2], Shirley A. Ward, Ph.D.[3]

Background of the Study

This article concerns itself with the same addictive population and treatment facility described in our first paper.

Our focus in this paper as the title points out, is primarily on nutrition and its connection with laboratory evidence of metabolic disease.

One of the primary objectives was to inspect the supply of food on hand. We observed white bread, refined sugar, ice cream, a large supply of Kool-Aid. canned fruits of assorted varieties, white rice, syrups, processed potatoes, processed luncheon meats and weiners with almost no vegetables of any description.

In the kitchen was an electric range with four burners (one did not work) and an oven door that would not close completely. This range was the only instrument available to feed 29 patients and eight staff counselors,

'. Libby Institute for Orthomolecular Medicine and Research
626 E. Commonwealth Ave.
Fullerton, California 92631

[2]. Orthomolecular Inc.
Suite 500. 201 South Lake Ave.
Pasadena. California 91101

[3] 3206 Drexel Drive Dallas, Texas 75205

for three meals per day ! There was no professional dietary or cooking staff; the meals were prepared by patients, on a rotating basis, as part of their work assignments. The food was selected and purchased by the head counselor, who possessed no training or education in this field.

These patients were allowed to receive extra food from their parents, spouses or sweethearts. These gifts were delivered to the hospital staff counselors for inspection as there was no personal contact between relatives and patients for the duration of their stay. On the first day of our arrival, a wife of one of the patients delivered a package to a hospital counselor for her husband. It included cookies, candy bars and other junk foods.

We decided some immediate and drastic changes would have to be put into effect if we were to provide any real assistance to these patients. We began urgent discussions with the staff and patients to encourage their cooperation in changing the dietary habits as well as asking their cooperation to voluntarily give up their "stashes" of candy, cookies, potato chips, soda pop and corn chips. The counseling staff readily agreed to the necessary dietary changes and food purchases.

We had much more difficulty with the patients, although they finally agreed.

What is more astounding, the majority of these items were purchased at the commissary, on the grounds of a state-operated psychiatric hospital ! ! We felt very strongly that there is a correlation between life-style, dietary habits and disease including many psychiatric illnesses. Therefore we conducted the following tests to determine if this hypothesis was true.

Methodology

On "day one" the patients gave a 24-hour urine specimen *to* determine the Cortisol levels, the 24-hour vitamin C levels and a 24-hour quantitative amino acid assay. We also took hair from the nape of the patients' necks to examine the minerals and toxic metal levels.

On "day two" the patients completed Computerized Medical Histories, Dietary Evaluations and Health Hazard Appraisal forms donated by Dietronics, Inc.. We requested the patients to fill out the dietary evaluation form as if they were still "on the streets" in order to evaluate their eating habits. This computerized form covers the entire range of liquids, carbohydrates, protein, fat and fiber intake and to what degree of regularity they ate these items.

The following chart represents information gathered from the patient concerning his/her eating habits and fluid intake. We single out in this graph the ratio of carbohydrates to calories that is equivalent to teaspoons of sugar. The generally considered normal for sugar intake is five teaspoons or less per day.

Ratio of Carbohydrates to Calories Translated Into Teaspoons of Sugar Equivalents

Patient #1	331
#2	48
#3	48
#4	23
#5	66
#6	38
#7	63
#8	75
#9	150
#10	150
#11	69
#12	136
#13	167
#14	81
#15	50
#16	94
#17	48
#18	107
#19	66
#20	84
#21	108
#22	47
#23	47
#24	71
#25	62
#26	32
#27	75
#28	208
#29 Total...	118 2,662

What an incredible amount of sugar equivalents these patients were consuming ! No wonder that 11 of this patient population tested as schizophrenics on their first Hoffer-Osmond Diagnostic Test (HOD). There was a total amount of carbohydrates equivalent to 2662 teaspoons of sugar consumed by the patients per day ! This figure (2662) converts to 27.5 pounds of sugar equivalent !!

We had known for some time that addicts of all types were also "hooked" on "junk foods". Our in-depth study as to the why of "junk foods" as a food preference has brought to light several reasons: (1) lack of extra money to spend on anything but their drug of choice, (2) no preparation required, (3) easy to carry, (4) drugs create "junk food" cravings, (5) helps to ease hypoglycemic withdrawal swings while waiting for their "connection", (6) ease of avoiding detection by others that he/she is under the influence of drugs by shopping in fast food chains. There certainly may be other reasons, but from our experience these six factors seem to cover the major reasons.

Ralph Steimen, M.D., of Loma Linda University, selected 45 diabetic patients and subdivided them into groups of 15 based on the degree of their diabetic state, (mild, moderate, severe). Dr. Steimen drew venous blood from all patients and added a set number of micro-organisms to each blood sample, then incubated for a time, made a slide and counted the number of germs per white blood cell.

Results: Mild: Each WBC picked up 3.9 germs
Moderate: Each WBC picked up 1 germ Severe: Each WBC picked up 1/3 germ

In a relatively healthy group, each white cell will pick up 13.2 germs.

It is of interest to isolate one patient in the study (patient number 13) to realize the mental effect sugar intake can have on the brain almost immediately. This 36-year-old female of good intelligence (IQ 133) was classified psychologically in the "normal" range until she took her third battery of psychological tests, where she scored in the range of a schizophrenic. Since she had done so well in the program up to that point, she was questioned carefully about what might have occurred to put her in such a mental state. Also, of extreme interest was that she attained a Ratio score (RS) in the HOD test of 11.3 ! Her previous score in this area was 2.6. The normal cut-off range is 4.9 for the Ratio Score. Hoffer and Osmond state that scores above 4.9 are defined as non-schizophrenic psychiatric patients ! The lady was surprised by this questioning. She said she had wanted to do her best in the testing, but being nervous and thirsty, she drank a can of root beer just before the test. It appears that she went from normal to schizophrenic in just about the time it took to swallow the contents of that can of root beer!

Family Histories of the 29 Patients

The physician often wonders what parts, if any, of the patient's family history contribute to his/her present illness. While this study population is much too small to draw any conclusions, it is nonetheless interesting. (See chart next page.)

Health Hazard Appraisal (HHA)

Do the life styles chosen by alcohol and drug abusers affect them in any way demonstrable ? We wanted to look at this question, so we chose a computerized test developed by Dr. Lewis C. Robins and Associates at Methodist Hospital in Indiana. This is a new tool of preventive medicine which is based on the U.S. Census.

The statistics are based on tables including race, sex, age and other data, which permitted one to predict the approximate time of death, based on life style. The additional data included specific physical information, which must be obtained from each individual *to* be so appraised, i.e. blood pressure, blood studies and life style were included.

The data is then computerized and enables one to precisely enumerate corrective measures in the form of personalized specific suggestions as to how each individual may prolong his/her life. Changes of life style and adoption of these suggestions, would result in achieving the age of compliance; that is, "live better and you will live

FAMILIAL HISTORY

Patient # 1	S	CS	K X	M	CV X	HYPO	HEPT	N	R	D
# 2		X			X	X				
# 3					X					
# 4					X	X		X		
# 5	X	X	X		X	X	X	X	X	
#6				X	X		X			
# 7					X			X		X
# 8				X				X		
# 9				X	X		X			X
#10					X	x				X
#11								X		
#12					X			X		
#13					X	X		X		
#14					X					X
#15										X
#16					X					
#17										
#18										X
#19					X					
#20	X	X			X			X		
#21			X	X		X	X			X
#22								X		
#23	X	X				X		X		X
#24										
#25										
#26	X									
#27	X					X				
#28	X	X			X					X
#29 TOTALS	6	5	3	4	X 17	8	X 6	9	-,, ---- 1 -------- 1	1 9

Legend: S=Suicide
CS=Contemplated Suicide K=Kidneys
M=Malignancy CV=Cardiovascular
HYPO=Hypoglycemia HEPT=Hepatitis
N=Neuromuscular
R=Respiratory D=Diabetes

longer." For example, a 34-year-old person may be living in such a manner that his/her body is actually that of a 45-year-old. Complying with the suggested changes toward better health may return the person to his/ her normal age of 34, or somewhere in between. The length of time one has abused
one's body or taken unnecessary risks determines how much improvement can occur.

One can readily see what a tremendous, impact and influence using substances of abuse have on the potential life span of an individual.

Patient	Chronological Age	Health Appraisa Age	1 Compliance Age
#1	22	36	18
#2	25	42	27
#3	22	16	15
#4	22	31	29
#5	29	51	46
#6	40	46	43
#7	30	32	28
#8	18	46	19
#9	31	33	30
#10	27	50	44
#11	25	27	23
#12	22	21	18
#13	33	36	32
#14	26	45	43
#15	21	43	14
#16	24	32	30
#17	26	30	28
#18	23	45	17
#19	22	21	18
#20	45	50	42
#21	27	43	42
#22	19	47	21
#23	19	20	12
#24	28	46	45
#25	31	42	30
#26	25	40	27
#27	26	49	43
#28	20	43	28
#29	40 1	49	39

Cortisol Levels

The steroid hormones are secreted by the adrenal glands and the gonads. The gluco-corticoids of the adrenal glands, e.g. Cortisol and corticosterone, promote gluconeo-genesis from the catabolism of protein, stimulate fat deposition, increase muscle strength and efficiency, increase renal blood flow, reduce the intensity of the inflam-matory reaction, and protect against the noxious effects of trauma. Since they tend to raise the blood glucose concentration, they have an indirect anti-insulin effect. Since the tested patient population was 100 percent hypoglycemic, one would anticipate an increased 24-hour Cortisol urine secretion.

24-HOUR URINE CORTISOL LEVELS

Patient	Pre-Test 150	Post-Test
#1		34
#2	155	53
#3	93	33
#5	144	70
#8	93	88
#10	225	55
#13	205	40
#14	104	50
#15	25	52
#17	253	69
#18	226	50
#19	104	50
#20	52	23
#21	81	25
#25	128	60
#26	119	62
#27	102	100
#28	103	64
#29	104	53

The normal value for this 24-hour test: 10 - 90 mg/per 24 hours

Interpretation of 24-Hour Urine Cortisol Levels

It was necessary to make several comparisons in order to interpret the Cortisol levels. We note the fact that of the 20 patients in the study, all had pre-test and post-test fasting blood glucose levels within the normal range. The dietary evaluation forms were filled out by the patients according to their eating habits while "on the streets". Their "junk food" eating habits are reflected in the chart showing teaspoons of sugar equivalents and we take note of the fact that 100 percent of the patient population tested with the Harper Health Indicator Graph were hypoglycemic. These facts are seemingly contradictory because the Cortisol levels were high.

It is our opinion at this time that the following occurs:

When the patient is "on the streets" he is primarily eating "junk foods", thus elevating his blood sugar levels. Since these hyperglycemic cycles are intermittent, the blood sugar levels are then thrust into a hypoglycemic position and all the symptoms of hypoglycemia become manifest. Cortisol is then secreted to initiate gluconeogenesis and to convert glycogen in the liver and muscles to glucose to stabilize the blood sugar levels. Therefore, Cortisol levels at this time are elevated. Add to the above the constant high levels of stress that are a part of the addiction culture and one can see the picture more clearly.

The steady repeating of this vicious cycle. without an alteration in life style, will finally take its toll on the adrenal gland's ability to function and ultimately chronic adrenal insufficiency occurs. It appears that here is a perfect set-up for a clinical picture of pseudo-adult onset diabetes. In other words, if the adrenals are in a state of exhaustion, a sufficient amount of Cortisol cannot be supplied, thus compounding the "junk food" eating habits. The patient could very well show a blood and urine picture of a diabetic and might be placed on insulin as a result. It will be noted that with detoxification, supplementation of vitamins, minerals and amino acids, plus a drastic change in the diet, the Cortisol levels returned to the normal range.

Toxic Metal Examination off Hair

On admittance to the facility, we obtained hair samples from the nape of the patient's neck for analysis of toxic metals. Since there was a rolling entry into the program, these samples were not all collected at the same time. Of the 29 patients in this study, the following is a breakdown of toxic metals in the patient population.

Patient	Low Chromium	High Lead	TOXIC METALS High Cadmium	High Aluminum	High Arsenic
#1					
#2					
#3					
#4					
#5	X				
#6			X		
#7					X
#8	X				
#9					
#10		X			
#11					
#12					
#13				X	
#14	X	X			
#15					
#16		X			
#17		X	X		
#18					
#19					
#20					
#21		X	X		
#22		X	X		
#23					
#24					
#25		X			
#26		X			
#27		X			
#28					
#29 TOTALS:	3	X 10	4	1	1

Discussion off Toxic Metals Results

Ten patients registered elevated concentration of Lead in the hair samples. Now what does all this mean in terms of effect on the patient ? Some of the Central Nervous System symptoms would include muscular weakness and discomfort, tremors, perceptual disorders, headaches, loss of coordination, confusion and depression. Other symptoms could include loss of appetite, constipation, fatigue, diminished vitality and difficulty in handling stress.

Four patients were contaminated by Cadmium. Symptoms of excesses include hypertension, vascular diseases and emphysema to name a few.

Four patients also demonstrated low levels of Chromium. Chromium is not a

toxic metal, but it is an essential mineral and is involved in the functions of proteolytic enzymes. It is a co-factor in insulin metabolism necessary for proper glucose utilization, necessary for growth and longevity. Deficiencies may be associated with disturbances in glucose, lipid and protein metabolism. One patient, (number 13 again) had an elevated Aluminum level. Aluminum is a trace mineral, but it can be dangerous, even fatal ...Observe patient number 13's level of sugar equivalent intake. This patient indicated that her excess intake came from the fact that from morning until night she drank soft drinks from aluminum cans. Retesting of hair analysis can only be done every four to six months; therefore no post-testing was done.

Discussion off Vitamin B12

Vitamin B12 is important in protein, fat and carbohydrate metabolism. The human species cannot synthesize usable vitamin B12 and therefore must obtain it externally. Since this study dealt primarily with drug addicts, it seemed inappropriate to use B12 injections intramuscularly (the syringe and needle was still very strong in their memories), since this is the only effective route of administration. It has been fairly well established that irrespective of the amount of oral B12 given, only approximately 1.2 percent of that oral B12 is absorbed in the terminal ileium. This process is not dependent on the Intrinsic Factor (Verlin, H., Berlin, R. and Grante, D., Acta. Med. Scand. 184, 247-258, 1968; Hedstrand, H., Acta. Med. Scand. 187, 535-537, 1969). Even with the absorption of this small amount of B12 there are pitfalls. These would include a lack of hydrochloric acid, a lack of animal protein intake, and other gastro-intestinal problems creating poor absorption capabilities.

The most common findings in vitamin B12 deficiency are motor and mental difficulties. Symptoms are many: rapid heart beat, cardiac pain, shortness of breath, edema of the face, general jaundice and intense brown discoloration around the small joints, weakness and fatigue as a consequence of B12 anemia, inflammation of the tongue, loss of hair, lack of appetite, peripheral neuritis, spinal cord changes.'intermittent numbness and tingling in arms. legs, diminished tendon reflexes, unsteady gait, weakness of fine movements of hands, intolerance to noise or light, optic atrophy, auditory hallucinations, impaired memory and ability to learn or concentrate, confusion with paranoid delusions, mental depression and psychoses.

About 80 percent of pernicious anemia patients show some neurological involvement, and about 60 percent have personality changes. Emotional disturbances, psychoses and neurological abnormalities are frequently observed in vitamin B12 deficiency states. A vitamin B12 deficiency may occur in the majority of psychotic patients. Neurological symptoms or megaloblastic anemia are frequently not present and therefore exact diagnosis of B12 deficiency is often difficult. The question then became one of how to obtain orally the marvelous benefits that vitamin B12 could provide. In April of 1980, Dr. Libby went to Dartell Laboratories and asked if a sublingual B12 lozenge could be made in approximately the size and shape of a Nitroglycerin lozenge. He requested that the lozenge be pleasant tasting, but without sugar, and yet easily dissolvable. The research and development department of Dartell Laboratories was brought into the discussions and while nothing like it had been done, they were willing to take on the challenge. After a good deal of developmental work, the process was finally captured and Dartell produced a new and unique 1,000 microgram B12 micro-lozenge, naturally sweetened without sugar and yet, easily dissolvable under the tongue (less than four minutes).

The idea now was to test this lozenge with our patient population. We gave one lozenge three times daily for a period of seventeen days. Since treatment of pernicious anemia with vitamin B12 alone increases the rate at which Folic Acid is utilized by the body and may lead to a deficiency of Folate, we gave each patient 800mcg (0.8mg) of Folic Acid daily for the test period. Two men and two women were used as controls. They received no B12 during the test period other than the B12 contained in Branson's

Insurance Formula given daily.

VENOUS BLOOD B12 LEVELS

Patient	Pre-Test	Post-Test
Control: #1	400	260
#2	900	1490
#3	700	1465
#5	250	940
#8	650	1180
#10	950	1000
#13	950	989
Control: #14	1000	650
#15	456	600
#17	600	740
Control: #18	400	450
#19	995	1080
Control: #20	500	360
#21	550	740
#24	300	950
#25	450	1400
#26	350	810
#27	850	1130
#28	450	1350
#29	900	1500

Assay Method: Bio-Rad Cobalt 57

Normal for B12 levels of the blood: 200 - 800 PG/ML

Interpretation off B12 Test Results

The test results speak dramatically for themselves. Because of these incredible results, we feel much more study is in order. We are continuing our studies and are now including Folic Acid levels for investigation. We feel the ratios between B12 and Folic Acid are important, particularly from a therapeutic point of view. The controls were later given B12, but no post B12 levels were taken of the control group.

We also feel this contribution will help bring medical costs downward for those medical patients who are in constant need of B12 therapy. The convenience alone of the lozenge versus the needle and syringe has to be an overwhelming benefit to all concerned.

Several references cited in the Bibliography report the effective use of B12 in a psychiatric setting. Based on the pre-test. post-test results of B12, we believe these results make it obligatory to vigorously pursue further studies in all psychiatric hospitals.

Hair Analysis and The Harper Health Indicator Test

Hair analysis is a simple and effective method for determining mineral deficiencies and toxicities. Trace mineral nutrition is one area of health care that has been neglected for years primarily because there was no adequate method by which to assess mineral deficiencies. Modern day technology has overcome this problem and now hair

analysis takes its rightful place in laboratory analysis and diagnosis.

By testing the hair you are taking one to three months, or a mean of two months average, of mineral absorption by the system. This appears to be a better method to examine the body's excesses or deficiencies of minerals, trace minerals and toxic metals than blood or urine, because with blood you are stopping the body clock and looking at what is happening at that moment only.

The Harper Health Indicator Test is a list of 56 symptom designed questions and the higher the score attained, the more probability exists that the testee has an abnormal glucose metabolism problem.

HAIR ANALYSIS AND HARPER HEALTH INDICATOR

Patient	High Calcium	High Magnesium	Low Sodium	Harper
#1	X	X	X	
#2	X	X	X	98%
#3	X	X	X	
#4	X	X	X	98%
#5	X	X	X	
#6	X	X	X	50%
#7				
#8	X	X	X	
#9	X	X	X	98%
#10				98%
#11	X	X	X	98%
#12	X	X	X	
#13				
#14	X	X	X	98%
#15	X	X	X	98%
#16	X	X	X	98%
#17	X	X	X	
#18	X	X	X	
#19				75%
#20				98%
#21				
#22				75%
#23	X	X	X	98%
#24	X	X	X	98%
#25	X	X	X	98%
#26	X	X	X	98%
#27				
#28 #29	X	X	**X**	98% 75%

Discussion of Test Results in The Hair Analysis and Harper Indicator Test

In the hair analysis reports we searched all elements for population trends and we surely found one. Twenty out of 29 patients demonstrated high calcium, high magnesium and low sodium levels in their hair analysis. We believe the reason for this is the following:

The life styles and poor dietary habits and the "junk foods" eaten all contribute to cal-

cium and magnesium being pulled out of storage in bone and teeth for utilization by the body. The low sodium levels are accounted for by the increased Cortisol levels. When the adrenals respond to a situation by secreting Cortisol, sodium is lost in the urine.

There were no other trends in the patients tested via the hair analysis method.

The Harper Health Indicator Test reveals that out of the 18 patients who took this examination, 14 patients had a 98 percent probability of having hypoglycemia.

Areas of Special Interest

It should be of particular interest to parents to note that 98 percent of this patient population began their drug use at the age of 13!

It should also interest parents to know that 100 percent of the patient population of this study began their drug abuse with marijuana and/or LSD ! Twenty patients used heroin, 25 patients had used amphetamines, and 25 patients had used barbiturates and various combinations of the above.

This age of 13 seems to hold pretty close to a realistic figure from the many other patients we have treated. This is an age when children are given a little more freedom and a larger allowance because they have entered the magical realm of the "teens." If parents closely guide their children in the formative years in relation to their diets and supplementation, they may not have to face this problem at all. An absolute must for any party interested in childhood problems is Alexander Schauss' excellent book, "Diet. Crime and Delinquency." One wonders what would happen if parents paid closer attention to the "junk food" eating and drinking habits of their children before the age of 13. This factor alone may significantly reduce the potential for future addiction in their offspring.

Conclusions

1. It is apparent to us that there is an ongoing chemical contamination in these patients that traditional methods of detoxification do not address themselves to. Until this decontamination process is done, any form of treatment is useless.

2. It appears by the constantly accumulating data that drug or alcohol addiction is not a simplistic circumstance one can correct by simply withdrawing the patient from the offending substance.

3. Through our continued work, we have concluded that all addictions are the same and they (drug and alcohol) co-mingle very well. Separating these populations into separate programs is unnecessary, financially wasteful and counter-productive.

4. Addiction is addiction and to successfully treat addiction, the physician must address himself to the entire body. Every organ system of the body demands thorough and complete investigation. Then, and only then, can the physician treat the patient successfully.

5. We conclude that all forms of current therapies for addiction are outmoded and obsolete. The thinking of the past obviously has not worked and it is time for new, non-drug, non-toxic, and yet economically viable techniques to be recognized and receive the support they deserve.

Summary

This article is not to be taken out of context; the information contained herein represents only a part of the whole. The serious investigator must read all papers on this study to obtain an entire accounting.

Even under the most adverse of conditions, we took a twenty-nine member patient population and tested our hypotheses in a rigidly controlled environment in a highly successful manner. We were able to clearly disprove the traditional hypothesis; if you test "clean" you are "clean". Our hypothesis states that nothing could be further from the truth. It was our opinion that as long as the patient was not decontaminated from the residual molecules, he could not return to full mental, emotional and physical health. We were proved 100 percent correct!

FREDERICKS. C. and GOODMAN. H.: Low Blood Sugar and You. Constellation International. NY., p. 147. 1969.
HANSEN. T.. RAFAELSEN. O.J. and RODBRO. P.: Lancet 2. 965. 1966.
HUNTER. R.. JONES. M.. JONES. T.G. and MATTHEWS. DM.: Brit. J. Psychiat. 113. 1291. 1967.
MURPHY. F.. STIVASTAVA. PC. VARADI. S. and ELWIS. A.: Brit. Med. J. 3. 559. 1969.
NEWBOLD. H.L.: The Use of Vitamin B12 in Psychiatric Practice. Orthomolecular Psychiatry 1. 27. 1972.
SHULMAN. R.: Brit. J. Psychiat. 113. 252. 1967.
SMITH. A.D.M.: Brit. Med. J. 2. 1840. 1960.
STACHAN. R.W. and HENDERSON. J.G.: Ouart. J. Med. 34. 303. 1965.
WIECK. H.. PRIBILLA. W. and HEERKLOTZ. B.: Psychoses as a Manifestation of B12 Deficiency. Deitsch. Med. Wschr. 94. 1473. 1969.

Trace Elements in Human Nutrition:
PFEIFFER. C: Mental and Elemental Nutrients. SCHROEDER. H.: Trace Elements and Man. UNDERWOOD. E.J.: Trace Elements in Human and Animal Nutrition. 3 ed. Academic Press. NY.. 1971

Nutrition and Medical Illness:
LIBBY. A.F. and STONE. I.: The Hyoascorbemia-Kwashiorkor Approach to Drug Addiction Therapy. A Pilot Study. Jour, of Orthomolecular Psychiatry. 4th Quarter. 1977. LIBBY. A.F.: New Drug Addiction Therapy. The World Congress. 1978. SCHAUSS. AG.: Diet. Crime and Delinquency. Parker House. Ca.. 1980. STEINMAN. R.: The Journal of So. Calif. State Dental Association. 1964.