

The Hypoascorbemia-Kwashiorokor Approach to Drug Addiction Therapy: A Pilot Study

Alfred F. Libby¹ and Irwin Stone²

Drug addictions, like cancer, are terrifying conditions to the victims because of the feelings of hopelessness and abandonment generated by the rigors of and general failure of the orthodox "treatments."

Although crude opium addiction has a very long history, the large-scale addictive use of morphine salts, in this country, is generally dated from their use on wounded Civil War soldiers. Following 1864, morphine addiction was realized to be an emerging socially significant problem in this country; therefore searches were instituted to find less addicting drugs. The year 1890 saw the introduction of heroin. For about five more decades, to the year 1912, nothing was done to stop the rising tide of morphine and heroin users in this country.. The realization of that fact prompted in that year the organizing of legal opiate clinics, not however, to treat the addict, only to support the user's habit in an attempt to stem the

rising crime rate and sales of black market drugs. These legal opiate clinics remained open until 1924 when they were closed down as dismal failures. It took until the mid-1950's, another fallow period of about 30 years, before another major attempt started, the Methadone Program, which has continued up to the present. This program embraces the concept of orally giving a legally addicting drug (methadone) in place of an illegal addicting drug (heroin).

The lack of success in handling drug addiction, until now, is due to placing the emphasis on the legal aspects of the problem, mainly that of the crime and punishment concept, and ignoring the mental and physical condition of the addicts and neglecting to treat the health and metabolic problems of the victims. Drug addicts suffer from severe metabolic dysfunctions and are very sick people. Any attempted solution to the drug addiction problem which fails to bring total health back to the addict is doomed to failure.

1 Address reprint requests to Dr. Alfred F. Libby, 520 West 17th Street, Santa Ana, California 92706.

2 1331 Charmwood Square, San Jose, CA. 95117.

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Drug Addiction and the Genetic Disease, Hypoascorbemia

Drug addicts, like other humans, are born carrying a defective gene for the synthesis of the liver-enzyme protein, L-gulonolactone oxidase (GLO). This birth

defect (Stone, 1966) causes a potentially fatal, but now easily correctable (Stone, 1967) genetic liver-enzyme disease, Hypoascorbemia (Stone, 1966a). This "inborn error of carbohydrate metabolism" has destroyed the capability of the human liver to synthesize ascorbate from blood glucose, and thus deprives mankind of this important mammalian mechanism for combatting stresses. The normal mammalian response to stress is to increase liver-synthesis of ascorbate as an antistressor and detoxicant to maintain biochemical homeostasis within the body (Stone, 1972).

Most mammals carry the intact gene for GLO and normally produce, under conditions of little stress, about 10 to 20 g of ascorbate per day per 70 kg body weight to take care of their daily physiological needs. A biochemical feedback mechanism evolved in the early mammals (Stone, 1972a) which increased daily ascorbate production possibly three to fivefold under a variety of chemical and physical stresses. Humans, among the very few mammals deprived of this homeostatic protective mechanism, suffer more physiological damage from equivalent stresses unless exogenous ascorbate is supplied. Thus a daily intake of 10 to 20 g of ascorbate by a relatively unstressed adult human is not "excessively high," but well within the normal mammalian range. Under stress humans require about 30 to 100 g or more a day to maintain health. The therapeutic use of mega levels of ascorbate has met with great success in the treatment of the viral diseases (Klenner, 1974; Cathcart, 1976), cancer (Stone, 1976), and many other pathologies. The subsistence, "homeopathic" daily intakes of ascorbate, recommended for the past 40 years by the nutritionists as "vitamin C" for humans, would barely suffice to keep the other mammals alive and certainly not in good health. The wide acceptance of this erroneous nutritional hypothesis by modern Medicine has only led to the continued persistence of chronic subclinical scurvy (CSS Syndrome) (Stone, 1972b; Stone, 1977) as our most widespread and insidious human disease at

present.

Physiological Effects of Drug Addiction

The usual history of addiction follows this sort of pattern: The future addicts are born with the genetic defect for GLO, and already at birth are suffering from the CSS Syndrome. The CSS Syndrome usually continues throughout childhood, adolescence, and adulthood without much of an attempt at any significant correction. It has been our experience that all of the addicts we have dealt with began their introduction into the drug culture at an early age; first beginning with marijuana, alcohol, barbiturates, PCP, LSD, and then on to heroin. They usually begin as a weekend "high," escalating into a daily habit from which they can't escape. Each of these stresses further depletes the already dangerously low body stores of ascorbate leading to the severe exacerbation of the CSS Syndrome already present. Adequate repletion of the body stores of ascorbate is nonexistent.

On drugs, the addicts lose their appetite for food. Food deprivation or restriction leads to severe protein and vitamin malnutrition. All the chronic addicts tested suffer from hypoaminoaciduria. This has led us to regard a confirmed addict as suffering from a Hypoascorbemia-Kwashiorkor type of syndrome, and our treatment procedure was designed as an intensive holistic approach for the full correction of these genetic and multimalnutritional dysfunctions. The procedure is completely Orthomolecular, and no foreign substance or toxic narcotic or drug is used.

Briefly, by fully correcting this Hypoascorbemia-Kwashiorkor Syndrome, we are able to take the addicts off heroin or methadone, without the appearance of withdrawal symptoms. If during the period of full correction they take a "fix," it is immediately detoxified or otherwise handled by the body so that no "high" occurs. It is like injecting pure water provided the dosage of ascorbate is high enough. After a few days on the regimen, appetite returns and they start eating voraciously. They also have restful sleep.

Restless sleep or no sleep at all are characteristic of heroin and methadone addiction,

"Full correction" in the addicts treated comprised giving them 25 to 85 g sodium ascorbate a day in spaced doses along with high intakes of the other vitamins, essential minerals, and high levels of predigested proteins. This is continued for four to six days, and then the dosages are gradually reduced to lower holding dose levels that varied from about 10 to 30 g per day. Both the therapeutic and the holding dose levels may vary widely according to the clinical response of the particular addict being treated. The therapeutic dosage is usually slightly beyond the bowel tolerance level, held for 12 to 24 hours. Selection of proper dosage is based on clinical experience and observation and responses of the patient. Bowel tolerance is a concept introduced by Robert Cathcart (1976) for judging the toxicity of the pathology and the required dosage of ascorbate needed for treatment. Cathcart found the bowel tolerance increases with increased stresses on the organism. The general improvement in the well-being of the addicts within 12 to 24 hours after beginning sodium ascorbate detoxification is striking. It is demonstrated by improved mental alertness and visual acuity; appetite is returning, and the addict is amazed that treatment is working without the use of another narcotic.

Some Recent Work on Ascorbate

We do not claim to be the first to suggest or use ascorbate in the addiction problem, but we do claim to be the first to use sodium ascorbate properly to get these desired results. Ascorbate injected into rats at the rate of 100 mg per kg body weight attenuated and abolished the narcotic effects of morphine (Ghione, 1958). Ascorbate's detoxification of a wide variety of inorganic and organic poisons was reviewed (Stone, 1972) and included Klenner's work on the successful megascorbic treatment of barbiturate poisoning, snakebite, and Black Widow spider bites. It was also suggested in this review that

megadoses of ascorbate be used in drug addiction (Stone, pp. 157-158, 1972). Two interesting papers appeared in 1976, one from Thailand which showed that the sleeping time induced in rabbits by 15 mg of pentobarbital could be progressively reduced by increasing amounts of ascorbate injected five minutes prior to the pentobarbital. The sleeping times in minutes for ascorbate dosages of 0, 250 mg, 500 mg, 750 mg were 50, 29, 27, 23, and at 1,000 mg ascorbate the rabbits did not fall asleep at all (Bejrablava and Laumj-ansook, 1976). The other paper (Scher et al., 1976) was originally presented in 1974 to the North American Congress on Alcohol and Drug Problems, by these authors from the National Council on Drug Abuse and the Methadone Maintenance Institute, and was entitled, "Massive Vitamin C as an Adjunct in Methadone Maintenance and Detoxification." These authors realized that scurvy played a large part in the drug abuse problem, but they only saw ascorbate as a means to reduce some of the side effects of methadone administration like constipation, loss of libido, and restless sleep. For this they used about 5 g of ascorbic acid a day. It apparently never occurred to them that by switching to sodium ascorbate and increasing their dosage by a factor of 10, they could completely eliminate the ill-conceived Methadone Program with all its problems and at the same time have a simple, nontoxic, and elegant solution to the drug abuse problem.

The Orthomolecular Procedure for Correcting the H-K Syndrome

Originally in our early testing, when the addict came in we took a sample of urine for the simple C-STIX test for urinary spillover of ascorbate and a 24-hour specimen for a complete quantitative individual amino acid and related constituent column fractionation and assay. The results were so consistently low on the amino acids, and with no spillover of ascorbate, that we no longer go to the expense or bother of these tests.

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The narcotic intake is stopped, and the addict is given the first dose of sodium ascorbate, high levels of multivitamins and minerals, and nine tablespoons per day of PHH-Pro, in divided doses, a predigested protein preparation. Since the addicts have a rather abnormal digestive system, it is an aid to direct absorption of the amino acids into the vascular system if the liquid amino acid dosage is held in the mouth as long as comfortable before swallowing. The total amount of ascorbate given a day will vary with the extent of the drug addiction. It is never less than 25 g a day in spaced doses and can go to 85 g or more per day. As a rough rule-of-thumb means of judging dosage: a \$50/day habit needs 25 to 40 g sodium ascorbate, \$150 to \$200/day about 60 to 75 grams. Judging dosage comes with experience, and any errors should be on the high-dosage side because of ascorbate's extremely low toxicity and lack of side effects. The megadoses are continued for four to six days. During this time no withdrawal symptoms should be encountered (if any appear, increase the sodium ascorbate intake). Generally, in two or three days appetite returns and most patients begin to eat well and have restful sleep for the first time since the chronic addiction began. One of the first observations to be made of the patient on this Orthomolecular therapy is the rapid change in well-being; they feel good. The megadoses are then gradually reduced to holding dose levels of about 10 g per day of sodium ascorbate and lower levels of the vitamins and minerals. The predigested protein is discontinued if the patients are eating well.

Typical Case Histories

Case 1. T.M., male, age 23. Using drugs for 10 years. At 15, used heroin for a "weekend high." At the time our treatment was started, he was supporting a \$100-a-day habit. He had tried, on several occasions, the hospital detoxification programs of methadone and liquid Darvon. Each time this program of substituting another narcotic for the

heroin failed to give him satisfactory relief. The first thing he did when he came out of the hospital was to inject heroin because of the insatiable craving and being sick from the methadone or liquid Darvon. On coming in, his urine was tested for urinary spillover of ascorbate and amino acids. There was no urinary spillover, confirming the presence of hypoascorbemia and hypo-aminoaciduria. He was given 25 g of sodium ascorbate in 4 g doses along with the vitamins, minerals, and the protein supplements. After three days on the regimen, he began eating and feeling so much better and thinking more clearly, stating that "I don't want to go stealing no more," and he began to have restful sleep. The ascorbate was reduced to 10 g per day on the sixth day. He has now been on this holding dose for about three months and is completely drug-free and has lost his "desire" for the drug. He has graduated from the Manpower program and is now gainfully employed for the first time in his adult life.

Case 2. A.C., male, age 24. Began using heroin at age 15 and now had a habit costing between \$150 and \$200 a day. Had tried at least seven different hospitals for detoxification and was on methadone maintenance for three years. He still "fixed" with heroin, in order to take the methadone, as it upset his stomach and made him ill. "Methadone kills your insides," to quote the patient. He was such a skeptic of the value of our Orthomolecular program that on a Sunday he first took 45 g of sodium ascorbate and then in the space of five hours he "shot-up" \$300-\$400 worth of heroin, and he felt no effect from this large amount of heroin. He continued on the ascorbate, 45 g per day for 10 days, along with the vitamins, minerals, and protein supplement. Then the dosage was reduced to 10 g sodium ascorbate and continued for another 30 days. The patient has moved out of the area, but when last seen, he was drug-free and had an extreme sense of well-being and a good attitude.

Case 3. F.F., male, age 35. He had been on drugs for 23 years, the last seven

on the methadone maintenance program. He suffered the typical symptoms of methadone; severe constipation, loss of sleep, loss of libido. He would take laxatives and enemas, and still was unable to move his bowels. When he did have a bowel movement, the stool was so hard and impacted that he would "faint or blackout from the pain." He was given the sodium ascorbate at the rate of 25 g per day for four days; then increased to 45 g, then after one day reduced to 10 g of the 50-50 mixture of NaAA and AA. He is still on this dosage level one month later and was seen at this time. He was doing so well that his mental attitude was excellent, appetite had returned, he has normal bowel movements without laxatives, and his sex drive is slowly returning. He was advised to remain on the holding doses and return in one month for another checkup. Methadone maintenance is much more difficult to deal with than heroin addiction due to the adverse metabolic effect methadone has on the body.

At the time this paper was written 30 out of 30 patients were successfully treated in this pilot study under the supervision of AFL.

This reported 100 percent rate of success is the same as that noted by Dr. Cathcart in his megascorbic therapy of the viral diseases, "it works every time," provided enough ascorbate is used.

Orthomolecular Treatment of Drug Overdosage

Drug overdosage is a common occurrence because of the wide variability in the potency of the illicit "street" drugs and the tendency among addicts to mix different drugs. This causes many deaths among addicts. A nonspecific orthomolecular treatment of OD's, which acts as an antidote and rapidly relieves the stricken addict, is as follows: If the victim is unconscious, immediately but slowly inject 30 or more g of sodium ascorbate intravenously; if conscious and can swallow and retain liquids, give about 50 g of sodium ascorbate dissolved in a glass of milk.

Case History

A mother brought in her 16-year-old son who was totally "spaced out" on "Angel Dust" (PCP). This boy was incoherent and totally out of tune with reality. He was given 30 g of sodium ascorbate mixed in a glass of milk, and within 45 minutes he could hold a normal conversation. If he had been given 50 g, it is likely he would have become rational sooner. With intravenous ascorbate, this recovery time could be cut down to minutes.

Discussion

This joint pilot study was started in January, 1977, after a series of coincidences between the authors. Both authors had been working independently on the drug abuse problem for many years, AFL conducting occasional clinical tests on addicts since 1974 and getting exceedingly promising results, and IS working on the theoretical, genetic, and biochemical background. We heard of each other's work in December, 1976, and pooled our knowledge and experience. Stone had been trying unsuccessfully to get some clinical research started for over a decade. His latest and most discouraging attempt came in November, 1976, when a megascorbic clinical research protocol was turned down by one of the "top men" in the field with, "there is no evidence for usefulness of massive doses of vitamin C in **any** disorder (except scurvy)—least of all in conditions associated with heroin addiction." "Massive doses of .vitamin C are potentially toxic." "There is no known scientific basis for thinking that vitamin C would be beneficial in methadone maintenance or detoxification."

If we had not regarded this authoritarian certitude as utter nonsense, this promising new therapy of drug addiction could have been again delayed for years. This prevailing attitude toward mega-scorbics, however, convinced us that the orthodox drug abuse agencies were not the proper means for starting or conducting exploratory clinical tests on megascorbics in drug abuse. We also realized that getting any support for

clinical work involving megascorbics, the black sheep of orthodox funding agencies, would be next to impossible to obtain, and certainly impossible to obtain quickly. Libby's preliminary tests were so impressive and this work had been delayed for so long, that in view of the poor record of achievement by orthodox medicine, we felt immediate action was demanded. We eliminated all the time-consuming funding red tape by simply operating on our own personal funds and time.

The clinical results have been so successful in 100 percent of the 30 drug addicts treated to date of this writing, that we regarded the prompt presentation and publication of our data to be an absolute necessity.

As a consequence of the lack of funds, we have not been able to dot all the "i's" and cross all the "t's," and chase down all our speculations. We have, however, gone to a point where we can offer a reliable, nontoxic, simple, and practical procedure that has many advantages over the present orthodox means of handling drug addicts.

Even though this therapy utilizes sodium ascorbate, vitamins, minerals, and predigested protein, we believe that the main antinarcotic effect is due to the sodium ascorbate, and the other materials are necessary adjuncts. High levels of sodium ascorbate have analgesic properties as shown by the observations of Cameron and Baird (1973) and Saccoman (1976) in terminal cancer and by Klenner (1974) in the relief of pain of severe burns and snakebite.

In terminal cancer, the ascorbate analgesia was so good that the patients' heavy toxic morphine schedules were discontinued. Thus high levels of sodium ascorbate mimic morphine and probably fit into the opiate receptor sites. The fact that these terminal cancer patients abruptly removed from their morphine showed no withdrawal symptoms was one piece of evidence that indicated our megascorbic treatment of drug addiction would be successful.

As previously noted, ascorbate is a general detoxicant for many different poisons, but its

mode of action is mostly unknown. Klenner (1974) points out, "Ascorbic acid can be lifesaving in shock. Twelve grams of the sodium salt given with a 50 cc syringe will reverse shock in minutes. In barbiturate poisoning and monoxide poisoning, the results are so dramatic that it borders on malpractice to deny this therapy." The detoxicating effect of sodium ascorbate on narcotics appears to be so rapid that this very rapidity seems to preclude a mechanism involving direct chemical attack on the narcotic molecule to convert it into some inactive derivative. Also it works on so many different types of narcotic molecules. A more compatible hypothesis would be to view the action as a competition for opiate receptor sites of the brain, wherein high levels of sodium ascorbate in the brain prevent the attachment and displace narcotic molecules already attached to these sites.

Brain Receptor Sites

The research of S.H. Snyder and coworkers on the binding of morphinelike substances to brain opiate receptor sites was recently reviewed (Snyder, 1977). They have shown that the largest amount of binding occurs in cells from the very primitive limbic system deep within the brain. They also showed that the very primitive hagfishes and sharks have as much opiate receptor binding sites as the most advanced of the mammals, monkeys, and man. They found that the properties of these receptor sites in these early and most recent vertebrates were similar, indicating that few changes have been made during the course of about 400 million years of evolution. It is stated that, "This suggested that the opiate receptor is normally concerned with receiving some molecule that has remained the same throughout evolution . . . possibly a neurotransmitter which acts at these sites." Also the presence of high levels of sodium helps dislodge the narcotic from the receptor sites.

We speculate that these binding sites were evolved in the early vertebrates to

concentrate and localize, from the very low concentrations existing in these animals, the electronically labile ascorbate molecules, which aid in neurotransmission. The fact that these sites bind narcotics is purely happenstance, because of a possible similarity in molecular shape. There does not seem to be any obvious physiological evolutionary reason for concentrating narcotics in the nerve endings of this newly developing control system, whereas there may have been a great need to concentrate and obtain high levels of ascorbate at synapses to aid in efficient nerve impulse transmission. Ascorbate is a molecule that appears to have changed little in the last 400 million years and was present on the evolutionary scene long before the fishes appeared (Stone, 1972a). If this hypothesis is valid, then the receptor sites should be renamed "ascorbate receptors" instead of "opiate receptors." It should not be difficult to experimentally test the validity of these theoretical considerations.

The rapid quenching of the narcotic effect by mega levels of ascorbate led us to speculate on the possibility of utilizing this phenomenon for other purposes than drug addiction namely:

Implications

1. In surgery it might be possible to eliminate the patient spending hours in the recovery room "coming out" of the anesthetic which also requires nursing attendance. If the patient at the termination of the operative procedure was given a massive intravenous injection of sodium ascorbate, possibly in the neighborhood of 30 to 50 g, it might be possible for the patient to be awake before leaving the operating room. Giving the patient large doses of ascorbate immediately before an operation should be generally avoided, because it would increase the amount of anesthetic required to give an equivalent anesthetic effect. Giving the patient this postoperative dose of ascorbate would also have other salutary healing and antishock effects.

2. In the megavitamin treatment of

schizophrenia, large doses of ascorbate and niacin are routinely used. In schizophrenia, the brain receptor sites may be saturated with endogenously-produced hallucinogens or schizomimetic metabolites. The action of ascorbate may be to replace these hallucinogens on the receptor sites. In individuals where the therapeutic response to megavitamins is incomplete, it may be that the few grams of sodium ascorbate routinely administered may not be "mega" enough for this purpose, and they require daily ascorbate in the same range required in drug addiction, at least in the beginning of the therapy.

Materials and Sources

All the materials used in this study are Orthomolecular and are commonly available. No toxic chemicals or narcotics are employed.

The ascorbate may be obtained in several different types and forms, and it is best to have a sufficient supply of all to meet individual requirements. One should become familiar with the properties of ascorbate in its different forms. Sodium ascorbate can be obtained both as the pure crystalline powder and as 1 g tablets. The crystalline powder is very soluble in water, milk, and foods, is essentially tasteless, and a level teaspoon weighs about 3 g. A solution has a pH of slightly over 7. Ascorbic acid, while also quite soluble in water, has a very sour taste and is limited in the number of foods to which it may be added because of this sour taste. It has a pH of about 3 and will curdle milk if added thereto. Sodium ascorbate is the preferred substance for the megadosages.

The high-potency vitamin and mineral preparations were commercial multivitamin and mineral preparations in tablet form. Six tablets supplied the dosages listed in Table 1.

Sterile injectable sodium ascorbate is supplied in 30 or 50 ml vials containing a 25 percent solution. Use only the "preservative-free" product which may be obtained from Bronson or Preventix listed below. The intravenous route of

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TABLE 1

Daily Dosages of Multivitamins and Minerals

Vitamins		Minerals	
Vitamin A -	10,000 I.U.	Calcium	900 mg
Vitamin D	400 I.U.	Phosphorous	700 mg
Vitamin E	400 I. U.	Iron	20 mg
Vitamin B ₁	50 mg	Iodine	0.15 mg
Vitamin B ₂	50 mg	Magnesium	500 mg
Vitamin B ₆	100 mg	Potassium	90 mg
Niacin	100 mg	Manganese	5 mg
Ca Pantothenate	200 mg	Zinc	50 mg
Vitamin B ₁₂	10 mcg	Copper	1 mg
Folic Acid	0.1 mg		

administration of sodium ascorbate is more rapid and efficient than the oral route, since it bypasses the digestive tract. In drug overdoses and in occasional other cases it may have to be used, but in general we have tried to avoid the routine treatment use of the "needle and syringe" because of the psychological implications for the addict.

In an effort to reduce the number of separate products used in this procedure we have been experimenting with a single combined product comprising sodium ascorbate with the vitamins and minerals to be available soon both as a crystalline powder and tablets.

For the protein supplementation, we used a product called "P.H.H.-PRO" comprising a liquid predigested collagen solution containing mostly easily assimilable amino acids. This is available in plastic bottles up to 1 gallon size.

These products may be obtained from the following:

Bronson Pharmaceuticals, 4526 Rinetti Lane, La Canada, CA 91011.

Preventix Pharmacal Co., 503 South Raymond Avenue, Fullerton, CA 92631.

C STIX, the 10-second dip-stick test for ascorbate in urine, is available in bottles containing 50 plastic test strips from the Specialty Systems Department, Ames Company, Elkhart, Indiana 46514. The current price is \$6 per bottle of 50 strips.

Summary

Chronic drug addiction produces in the victims severe subclinical scurvy along

with multivitamin and mineral dysfunction and protein deficiencies. The widely used Methadone Program for "treating" these sick people merely substitutes a legal narcotic for an illicit one, which only continues the severe biochemical stresses contributing to their illness. This pilot study regarded the addicts as suffering from a serious Hypo-ascorbemia-Kwashiorkor type of syndrome. Our procedure was designed to fully correct both the genetic defect causing the Hypoascorbemia and also the multimalnutritional disturbances and protein deficiencies involved in the Kwashiorkor. The treatment is entirely Orthomolecular and inexpensive, is nontoxic, and uses no drugs or narcotics. It is rapidly effective in bringing good health to the addicts. In the initial phases of the procedure, sodium ascorbate is administered at 25 to 85 g per day or more, along with high doses of multivitamins, essential minerals, and protein hydroly-sate. Under this treatment, the heroin or methadone is stopped and no withdrawal symptoms are encountered. Should a "fix" be taken, it is immediately detoxified and no "high" is produced. It is like injecting plain water. There is a great improvement in well-being and mental alertness. In a few days appetite returns and they eat well, they have restful sleep, and the "methadone-constipation" is relieved. After about four to six days the dosages are reduced to holding dose levels. In the 30 addicts tested in this pilot study, the results were excellent in all cases, and it would appear that this

simple nontoxic procedure should serve as the basis for large-scale testing to develop a new program for freeing drug addicts of their addiction. In drug overdosage, sodium ascorbate can be a life-saving measure. Unconscious overdosed addicts are given the sodium ascorbate intravenously, 30 to 50 g, while those able to swallow can be given the same quantity dissolved in a glass of milk. This antidote is nonspecific and works on all drugs, so no time need be wasted in identifying the drug. We speculate on ascorbate's action as due to the high levels of sodium ascorbate in the brain as competing for and displacing the narcotic from the opiate receptor

sites. If this be the case, then it might be possible to use this phenomenon postoperatively on surgical patients to quickly bring them out of anesthesia.

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