Pharmacology Biochemistry & Behavior, Vol 21, Suppl , 1, pp 15–16, 1984 © Ankho International Inc Printed in the U S A 0091-3057/84 $3 00 + 00

Effects of Oral Intake of Cesium Chloride: A Single Case Report

ROBERT NEULIEB

R. R. No. 1, Box 118, Theresa, NY 13691

NEULIEB, R *Effects of oral intake of cesium chloride A single case report* PHARMACOL BIOCHEM BEHAV 21: Suppl 1, 15–16, 1984 —The author volunteered to experience on himself the effect of short-term, i e , 36 consecutive days, oral administration of cesium chloride Cesium chloride was given 6 g per day into two equally divided doses. The drug was dissolved in 8 ounces fluid and consumed immediately after the morning and evening meals which were diet-restricted to wheat bran and certain grain products, to attain approximately 1% potassium intake, for the initial 3 weeks Bread products were discontinued and yogurt and cottage cheese products were reinstituted for the two week period that followed prior to reinstituting of the preceding food regimens There was an initial general feeling of well-being and heightened sense perception A gradual decrease in appetite was noted initially before it was stabilized at a later date Discontinuation of rich bread meals resulted in pre-nausea sensation which was followed by diarrhea 48 hr later The institution of high potassium nutrition decreased the feeling of nausea and abolished diarrhea. A "tingling" sensation in the lip and cheek regions was experienced 15 min subsequent the cesium chloride dosage compared to same sensation occurring at moderate intensity in hands and feet at end of the experiment. No adverse effects of CsCl were noted in performance of mathematical analyses or in driving skill It is concluded that CsCl is devoid from toxicity provided adequate diet and supplements are administered

Behavioral effects Cesium Diet GI-effects Minerals Nausea Potassium supplement Side effects Vitamins

EXPERIMENTAL [1, 2, 3, 4] and clinical investigations [5,7] on cesium chloride (CsCl) show that it may be effective against malignant tumors It has been recommended in daily doses either in the range of 3–10 g or 5–10 g [3,4] or a total of 50 g/week [7]. These high daily dosages of CsCl may conceivably produce adverse reactions. The lack of information on the effect of non-radioactive Cs on man prompted this study.

METHOD

The subject was a healthy 41 year old male Caucasian The CsCl was given orally in two daily dosages of 3 g each after morning and evening meals, respectively. Each CsCl dosage was dissolved into 8 ounces of liquid. In addition, the effects of oral intake of 3 g of CsCl on an empty stomach was studied. On two occasions an additional 1.5 g or 3.0 g were consumed prior to breakfast. An additional 3 g was also taken immediately after supper that evening in order to increase the dose for that day to 12 g, which slightly exceeds the recommended dosage range Vitamin and mineral supplements were maintained throughout the 36 day period as described in the Discussion.

The diet of the initial 3 week period for both breakfast and supper meals consisted principally of a quick bread product composed chiefly of wheat bran. Other grain products such as rice bran, oats, wheat germ and corn meal were added in a lesser amount Generous quantities of kelp and blackstrap molasses were added. It is estimated that the amount of potassium contained in the quick bread would be about 1% by weight However, it should be noted that the product is rich in fiber and therefore the availability of the potassium is unknown The intake of the quick bread product ceased between the fourth and fifth weeks of the study and yogurt and cottage cheese products were largely used in its place. Due to reasons explained below, the use of the quick bread products were resumed for the remainder of the experiment.

RESULTS

No discomfort or debility of any kind was observed during the period of time that the quick bread product was consumed. Likewise, during the entire, test, no difficulties were encountered in performing the subject's duties as a mathematical analyst or in other tasks such as driving, i.e., a daily driving distance of approximately 50 miles The subject experienced loss of migraine headaches, but an initial gradual loss of appetite was observed. After 2 weeks, the intake of the quick breads at both breakfast and supper decreased to a level approximately 60% of that consumed before the CsCl trial. At this point the appetite seemed to stabilize. Significant difficulties were observed in consuming a noon meal which had been purchased for the last three years at the same local restaurant. A sensation of nausea developed shortly after discontinuing the quick bread meals This was followed a couple days later by diarrhea. It was observed that the intake of substances such as kelp and other high potassium foods reduced the pre-nausea sensations and prevented the diarrhea However, a diarrhea feeling persisted which caused considerable irritation to a hemorrhoid.

This resulted in significant discomfort The quick bread meals were resumed and this was associated with remission of this discomfort No high potassium supplement was available during this period The diet contained considerable potassium However, it was rich in many minerals and vitamins along with being a high fiber diet

There was an initial onset of a sense of general well-being and of heightened sense perception A tingling sensation was perceived in the areas of the lips and cheeks approximately 15 min after the administration of 3 g of CsCl dose Early in the experiment an occasional minor tingling in the hands and feet were experienced Towards the end of the experiment, more general minor tingling of hands and feet were noted

DISCUSSION

The present study was performed to assess side effects of CsCl involving the gastrointestinal tract, specifically nausea and diarrhea The experience resolved from this evaluation of CsCl indicates that discomforts occurred as a consequence of CsCl dosages used can be controlled by diet and perhaps of food supplements It should be also noted that the toxicity of CsCl may be dependent upon the presence of other substances [1–3]. For example, availability of weak acid radicals, such as contained in vitamin A, vitamin C and minerals which form double bonds with oxygen (such as zinc and selenium), can increase the toxicity of CsCl in general This increase in toxicity is believed to result from improved transport of the Cs^+ across cell membranes The acid radicals are anions which when absorbed into cells increase the negative potential gradient across the cell membrane. On membrane surfaces, the double bond of minerals (as zinc and selenium) form radicals with oxygen which are sufficiently strong electron donor to enhance the cation (Cs^+) attraction It has been suspected that the bond between carbon and nitrogen in substances such as cyanide might similarly facilitate Cs^+ transport [1,3] Since this same increase in toxicity should be experienced by malignant cells the intake of certain supplements in the treatment of cancer has been recommended [3] These are, vitamin A 50,000 units/day, vitamin C 10 g/day and zinc 200–400 mg/day In addition, unspecified amounts of selenium may be useful

Potential K deficiencies have been reported in both animal experiments [4] and clinical therapy involving Cs administration (Nieper 1982, Unpublished Results) These observations prompted the oral administration of approximately 2 g KCl [5,7] while others administered KCl by infusion as well as orally to cancer patients (Nieper 1982, Unpublished Results) Typically, vitamin E is also administered [4,5] Therefore, the following addition of oral supplements were consumed in the present study The daily levels used on a full stomach were Vitamin A 50,000 IU, vitamin C 10 5 g, Zinc 76 6 mg, selenium 446 mcg, potassium 132 mg, vitamin E 800 IU, magnesium 333 mg and vitamin B_{12} 500 mcg The vitamin B_{12} is used because it is believed to contain a bonding similar to cyanide The amount of magnesium given is due to possible effects of cesium on the central nervous system

The CsCl dosage selected for the present evaluation was within both ranges recommended [1–3] However, other studies [7] indicate that in many cases a total dose of about 200 g Cs salt was required to produce a complete tumor regression The use of such multiple dosages of CsCl in man exceeds these used in lithium and rubidium therapy Nonetheless, the CsCl side effects experienced were relatively minor and interestingly CsCl intake seems to eliminate and prevent migraine headaches This is similar to that reported results obtained by potassium [6] The prevention of migraine headaches cannot be attributed to the diet or supplements, as they have been taken in the same amounts on other occasions before the CsCl experiment No other side effects were significant enough to have made an impression This should not be taken to imply that no other effects would have been observable to me had I looked for them However, a general upper limit to other effects can be established In conclusion, if CsCl proves to be effective against cancer, I observed nothing that would have discouraged me from taking it as a treatment

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