

Homeostasis Is Maintained in Yan Xin Life Science Technology-Optimized Caloric Restriction: Physiological and Biochemical Studies

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Yan Xin Life Science Technology-Optimized Caloric Restriction (YXLST-CR) is a unique food abstinence, which suppresses appetite and sensation of hunger while maintaining physiological homeostasis. The authors review the first clinical case study on YXLST-CR, or YXLST-bigu, a 15-day, 24-hour observation in 1987 on a 21-year-old female undergoing YXLST-bigu for several months. The participant took no food or water and conducted normal physical activities. The daily records of body weight, temperature, pulse rate, blood pressure, and daily urine test results showed no abnormalities. Homeostasis was maintained during YXLST-CR. The authors also report serum leptin levels in a group of individuals undergoing YXLST-CR and a control group before and after a 24-hour water-only period. The leptin level prior to the observation for the YXLST-CR group was lower than that for the control group and remained unchanged

during the observation, suggesting the possibilities of an established metabolic adaptation.

Keywords: *caloric restriction, Yan Xin Life Science Technology (YXLST), bigu, clinical observation, leptin*

Recent studies show that dietary caloric restriction (CR) is one of the most robust and reproducible means of slowing aging and extending life span in a variety of short-lived species and possibly longer living animals as well (Couzin, 1998). Research into the molecular basis of the antiaging effect of CR showed that at the gene transcription level, CR retards the aging process by selectively attenuating the age-associated induction of genes encoding inflammatory and stress responses (Lee, Klopp, Weindruch, & Prolla, 2000). It is also likely that CR reduces the production of free radicals

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and reduces the cumulative damages to cells that lead to aging (Sohal & Weindruch, 1996).

However, the application of CR into human population faces severe challenges due to several drawbacks associated with CR. In essence, CR requires a dramatic change of lifestyle that is unlikely to be carried out voluntarily in the human society (Sohal & Weindruch, 1996).

On the other hand, *bigu*, or living without food, seems to indicate a possible way of living a pleasant life with eliminated food intake or drastically reduced calorie consumption. According to Chinese Encyclopedia (Encyclopedia of China Editorial Board, 1992), "Bigu means abstinence from food. It is a special health-preserving technique to seek longevity through strict abstinence of food" (p. 21). Chinese history books also describe bigu as "eating qi to avoid eating food" and have recorded a number of bigu cases with apparent health and longevity benefits (Encyclopedia of China Editorial Board, 1992). Although bigu has always been a rare phenomenon during the several thousand years of recorded Chinese history, in the past 15 years, hundreds of people have reported having experienced bigu phenomenon as a result of coming into contact with Yan Xin Life Science Technology (YXLST) in North America and elsewhere (Paper Editing Committee, 1997; Participants in YXLST-CR experiments, 2000). These people in such Yan Xin Life Science Technology-Optimized Caloric Restriction (YXLST-CR or YXLST-bigu) are reportedly able to receive the benefit of CR without the difficulties accompanying CR.

Yan Xin Life Science Technology has been applied by Dr. Yan Xin, (Yan is the family name), a chief physician and renowned life scientist, in a wide range of scientific and medical fields. A significant number of extraordinary effects long sought by scientific and technological communities have been obtained. Some of the results have been presented at scientific conferences and published in scientific journals, including breakthroughs in cancer curing (Yan, Fong, Jiang, et al., 2002a, 2002b) and antiaging (Yan, Fong, Wolf, Brackett, Zaharia, Wolf, Lerner, Lee, & Cao, 2002; Yan, Fong, Wolf, Brackett, Zaharia, Wolf, Lerner, Lee, Parker, et al., 2002; Yan, Fong, Wolf, Wolf, & Cao, 2001; Yan, Fong, Zaharia, et al., 2001), as well as in physical sciences (e.g., Yan, Lin, Li, Traynor-Kaplan, et al., 1999; Yan, Lu, Jiang, Wu, et al., 2002).

Since late 1980s, a number of YXSLT-CR cases have been clinically observed and confirmed in China

(Human body science laboratory at Beijing Normal College, excerpted in Xu, 1988) and the United States (Yan, Li, Lu, & Chin, 2000), which provide solid evidences for the effects of Yan Xin Life Science Technology. In fact, one of the authors, Jun Wang, has been in a state of continuous YXSLT-CR for more than 11 years under the supervision of Dr. Yan. However, the mechanism of YXSLT-CR remains to be explored. The clinical observations and case reports suggest that YXSLT-CR may be a special living state that maintains a balanced and stable biochemical state within YXSLT-CR participants' bodies. In an attempt to test more rigorously the biological adjustments occurred in an YXSLT-CR state, we designed a controlled study and compared bigu with regular fasting using blood leptin level as an evaluation criterion.

In 1994, hormone leptin was identified as the key element of the physiological system to regulate food intake and energy homeostasis (Shimokawa & Higami, 2001). Leptin is produced by fat tissue and reports nutritional information to food intake regulatory centers in a brain region known as the hypothalamus. Many studies showed that a decreased level of leptin stimulates food intake and an increased level of leptin reduces the food intake in ordinary people. Recently, a role of leptin in the antiaging mechanism of dietary restriction was suggested. It was reported that the reduction in plasma leptin level might be one of the neuroendocrine modulator that the animals invoke in responses to dietary restriction to trigger molecular mechanisms that retard the aging processes. In both animal and human participants, the leptin level increases with advancing age and decreases under caloric restriction treatment (Caprio, Fabbri, Isodori, Aversa, & Fabbri, 2001).

The First Clinical Study of YXLST-CR

The first YXLST-CR clinical study case was conducted in 1987 by the Human Body Science Laboratory of Beijing Normal College in collaboration with Dr. Yan (Human body science laboratory at Beijing Normal College, excerpted in Xu, 1988). The participant was a 21-year-old female who entered into an YXLST-CR state after meeting Dr. Yan. She was in an YXLST-CR state from October 3, 1987, to February 12, 1988, for a total of 133 days. For 106 days, from October 3, 1987, to January 16, 1988, she did not eat or drink anything except a drink of water on December 29, 1987 (106 days without food and 87 days without

water). She weighed 48.5 kg one month before the start of YXLST-CR. Her weight was 48.5 kg on the 10th, 25th, 35th, and 45th day of YXLST-CR, and 50 kg on the 117th day. Without even drinking water, she sometimes gained 0.5 kg to 1 kg after a telephone conversation with Dr. Yan. During this period, she had high spirits, good physical strength and reduced sleep time, and carried out various physical activities such as carrying coal, changing the cooking gas container, cooking, and cleaning. She climbed the Great Wall on October 7, 1987, along with a group of people healed by Dr. Yan. Her nuclear magnetic resonance (NMR) tests at Beijing Tumor Hospital, electrocardiogram and blood tests at Naval General Hospital conducted between the 50th and 63rd days of her participation in YXLST-CR showed normal results. She also attended Dr. Yan's qi-emitting lectures at Central Party School, Science and Industry Commission of National Defense, Xinhua News Agency, PLA General Hospital, Tsinghua University, China Youth Daily, and so forth, from October 24 to November 18, 1987.

During October 15 to 29, 1987 (the 74th to 88th days), the Human Body Science Laboratory of Beijing Normal College conducted a 15-day monitoring study on her to verify the objective existence of YXLST-CR phenomenon. The study was conducted at Beijing Normal College. A total of 22 researchers participated in the study.

Observation Methods

1. A strict search was conducted of the participant and the designated places in which the observation was carried out. No food or drinking water was present (except the bathroom, where there was tap water).
2. Within the 15 days, a 24-hour, day and night, continuous monitoring was strictly carried out and enforced. The participant was always within the sight of monitors.
3. The body weight, body temperature, pulse rate, and blood pressure of the participant and a control group were constantly measured. The amount of urine of the participant within 24 hours was measured and urine tests were conducted daily.
4. Under the condition of staying within the sight of the monitors, the participant often had outdoor activities and was allowed to have contact with the outside and have phone conversations.

5. During the monitoring period, records were made using photography and video taping.

Observation Results

The results are the following:

1. The participant did not eat anything.
2. The participant did not touch water except during washing and tooth brushing.
3. The participant had the energy and strength of an ordinary person.
4. The participant's body temperature, pulse rate, blood pressure, and urine test results showed no apparent abnormalities.

The participant was found to be able to perform physical activity as usual and showed no signs of fatigue. Her internal physiological environment was well maintained during the period of observation. The around-the-clock monitoring generated great pressure and stress for the participant. Her weight decreased slightly, then quickly bounced back. Despite the interference, the state of the participant matched the description of *standard bigu* because she did not consume or receive anything during the observation period. This case provided direct clinical evidence that YXLST-CR phenomenon does exist. The participant experienced YXLST-CR after coming in contact with Yan Xin Life Science Technology. The results suggest that Yan Xin Life Science Technology has the ability to enable human beings to acquire energy through certain unknown mechanisms other than regular food intake.

Discussion

One obvious benefit of YXLST-CR is the drastic or even total elimination of food intake. In an YXLST-CR state, the participants have much less or even no food intake while carrying on their normal daily life. Thus, it could be a potentially useful tool for rescue efforts in a disaster situation or human expeditions into deep space in the future where food production is severely limited.

Furthermore, when food processing ceases or significantly decreases, the production of free radicals, which may adversely affect the human aging process, are drastically reduced as well. The implication of long-term YXLST-CR for the maximum human life span is truly worth pursuing.

Serum Leptin Levels in Human Participants Undergoing YXLST-CR

Methods

In experiments with leptin measurements, participants were divided into two groups—the YXLST-CR group, with 5 male and 3 female healthy volunteers who had been in the YXLST-CR state for more than 2 days, and the normal control group, with 5 male and 3 female healthy volunteers who had never experienced CR. No significant differences between the YXLST-CR group and the normal control group in age (21–48), Body Mass Index (19 ± 1 and 22 ± 2 , respectively) and other general health conditions were present. No participant had a family history of specific diseases or was receiving any medication at that time.

Participants of both groups stayed on the sites of experiment, and all of activities were monitored and recorded during the 24-hour test period. No food and drink—except water—was allowed within the 24-hour period. At the beginning and the end of the 24-hour period, 10 ml blood samples were taken and immediately centrifuged at $1000 \times g$ for 30 minutes to obtain blood serum that was stored in -80°C until used. Serum leptin level was measured by standard radio-immunoassay using a commercially available human leptin RIA kit (Linco Research, St. Charles, Missouri) as described by the manufacturer. All samples were assayed in duplicate.

Data are presented as the mean \pm SE. Statistical analyses were performed. A probability value of < 0.05 was considered to be significant.

Results

YXLST-CR displays low blood levels of leptin. For the participants in the normal control group, leptin levels decreased in response to CR, in agreement with results published previously. After a 24-hour period of water-only without food or drink intake, the serum leptin level dropped from 3.05 ± 0.52 ng/ml to 1.89 ± 0.57 ng/ml in the normal control group, and the average reduction was 1.16 ± 0.24 ng/ml, indicating that the change was statistically significant ($p < 0.05$). In contrast, the participants with YXLST-CR showed a lower baseline of leptin, 1.32 ± 0.26 ng/ml and a similar value of 1.57 ± 0.19 after a day of CR, the average increase was 0.26 ± 0.21 ng/ml ($p > 0.05$). These participants in the YXLST-CR group also did not experi-

ence the sensation of hunger as the normal control group did during the one day of strict CR.

Discussion

CR is known to reduce production of oxidative-free radicals, which are thought to be the major reason causing living organisms to age (Caprio et al., 2001; Shimokawa & Higami, 2001). Mitochondria, the cellular power plants that draw energy from nutrients to produce adenosine triphosphate (ATP) for cells' functions, also produce various types of free radicals in cells as byproducts. The free radicals and their consequent products in turn damage mitochondria components, thereby interfering with the efficiency of ATP production and increasing the output of free radicals. Meanwhile, free radicals attack other cellular components such as proteins, lipids, and DNA to further impair the function of cells as well as that of the tissues and organs they compose. The oxidative injuries accumulated over time lead to the aging of the body (Davidson & Sittman, 1994). The benefit of CR is evident to extend the life span, but the sensation of hunger makes it difficult to follow through. The fact that participants in the YXLST-CR group also did not experience the sensation of hunger as the normal control group did during the one day of strict CR suggests that some unidentified biological processes may have been modulated in participants undergoing YXLST-CR.

Many overweight people experiencing YXLST-CR never encountered the problem of being hungry while losing their body weight to a normal level, which is highly desirable for the ever increasing overweight population. In the United States, 58% of the population is considered overweight and have medical problems associated with their obesity. YXLST-CR appears to be a feasible remedy for this purpose.

The psychological function in these individuals with YXLST-CR remained well and sometimes even better. They appeared to be alert, happy, and were able to maintain normal life activities. It remains to be discovered how they obtained their energy other than from food resources.

APPENDIX

Warning About Bigu

All cases of YXLST-CR, or YXLST-bigu, were carried out under the supervision of Dr. Yan. Although bigu was mentioned more than 2000 years ago by ancient Chinese

medicine, no systematic or actual bigu methods have been described. It has been commonly recognized that no ordinary persons can undergo bigu on their own and that bigu requires the guidance of a person with special abilities. Due to various reasons, since July 1994, Dr. Yan has suggested a number of times that people in a state of YXLST-bigu revert to their eating state and has advised against anyone wishing to undergo bigu on their own.

References

- Caprio, M., Fabbrin, E., Isodori, A. M., Aversa, A., & Fabbri, A. (2001). Leptin in reproduction. *Trends in Endocrinology Metabolism*, 12, 65-72.
- Couzin, J. (1998). Low-calorie diet may slow monkeys' aging. *Science*, 282, 1018.
- Davidson, V. L., & Sittman, D. B. (1994). *Biochemistry* (p. 142). Philadelphia: Harwal.
- Encyclopedia of China Editorial Board. (1992). *Encyclopedia of China, traditional Chinese medicine volume* (pp. 21-22). Beijing and Shanghai, China: Encyclopedia of China Publishing House.
- Lee, C., Klopp, R. G., Weindruch R., & Prolla, T. (2000). *Nature Genetics*, 25, 294.
- Paper Editing Committee. (1997). *Yan Xin qigong collectanea* (Vols. 1-9). New York: The International Yin Xin Qigong Association.
- Participants in Yan Xin Life Science Technology-Optimized Caloric Restriction (YXLST-CR) Experiments. (2000, June). Case reports presented at The New Century First National Yan Xin Qigong Scientific Research Conference, the Pennsylvania State University, University Park.
- Shimokawa, I., & Higami, Y. (2001). Leptin signaling and aging: Insight from caloric restriction. *Mechanisms of Aging and Development*, 14, 1511-1519.
- Sohal, R. S., & Weindruch, R. (1996). Oxidative stress, caloric restriction, and aging. *Science*, 273(5271), 59-63.
- Xin, Y., Fong, Y. T., Wolf, G., Wolf, D., & Cao, W. (2001). Protective effect of XY99-5038 on hydrogen peroxide induced cell death in cultured retinal neurons. *Life Sciences*, 69, 289-299.
- Xu, X. (1988). Report (abstract) of a 15-day bigu study. In C. Qian & X. Zhou (Eds.), *Lights of ancient treasure—Yan Xin and qigong* (pp. 272-273). Beijing, China: Workers' Press.
- Yan, X., Fong, Y.T., Jiang, H., Zhang, C., Hu, D., Shen, H., et al. (2002a, June). *XY-S induces apoptosis in colorectal cancer cells independently of p53-status but has no significant cytotoxicity to normal human cells*. Paper presented at the 4th International Conference: Perspectives in Colorectal Cancer, Barcelona, Spain.
- Yan, X., Fong, Y. T., Jiang, H., Zhang, C., Hu, D., Shen, H., et al. (2002b, April). *XY-S exhibits potent and selective cytotoxicity to a variety of human cancer cells but not normal cells*. Paper presented at the International Scientific Conference on Complementary, Alternative and Integrative Medicine Research, Boston.
- Yan, X., Fong, Y. T., Wolf, G., Brackett, D., Zaharia, M., Wolf, D., Lerner, M. R., Lee, G. D., & Cao, W. (2002, February). *Role of XY99-5038 in neuronal survival and protection*. Paper presented at the fourth World Conference on Molecular Biology: Cell Signaling, Transcription and Translation as Therapeutic Targets, Luxembourg.
- Yan, X., Fong, Y. T., Wolf, G., Brackett, D., Zaharia, M., Wolf, D., Lerner, M. R., Lee, G. D., Parker, A., et al.. (2002, April). *Effects of XY99-5038, a preparation of traditional Chinese medicine, on neuronal survival and protection against oxidative stress in culture*. Paper presented at the International Scientific Conference on Complementary, Alternative and Integrative Medicine Research, Boston.
- Yan, X., Fong, Y. T., Zaharia, M., Parker, M., & Cao, W. (2001, November). *XY99-5038 delays age-dependent changes of retinal neurons in vitro*. Paper presented at Society for Neuroscience 31st Annual Meeting, San Diego, CA.
- Yan, X., Li, C., Lu, C., & Chin, W. (2000, June). *Observation of human leptin levels in an YXLST-bigu state*. Paper presented at The New Century First National Yan Xin Qigong Scientific Research Conference, the Pennsylvania State University, University Park.
- Yan, X., Lin, H., Li, H., Traynor-Kaplan, A., Xia, Z., Lu, F., et al. (1999). Structure and property changes in certain materials influenced by the external qi of qigong. *Materials Research Innovations*, 2, 349-359.
- Yan, X., Lu, F., Jiang, H., Wu, X., Cao, W., Xia, Z., et al. (2002). Certain physical manifestation and effects of external qi of Yan Xin Life Science Technology. *Journal of Scientific Exploration*, 16(3), 381-411.
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