

Miraculous Survival of Three Trapping Miners by Drinking High Mineral Mine Water for 25 Days

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Little is known that how long a human been can survive a complete starvation. There were dozens of miners who lost their lives in a coal mine disaster at Qinglong, Guizhou, China in June 2009, only three of them were rescued 25 days later after they had been trapped in a coal mine 600 meters underground. They maintained their lives only by drinking mineral water in the mine, which created a miracle of life. We reported here on this life miracle in relation to high mineral mine water.

The three miners were all males, aged 35-36 years old. Before they went down into the mine, their body weights were 60, 66 and 60kg, respectively. However, when they were rescued from the mine, their body weights decreased to 39, 43 and 39kg respectively. Their respiratory rates were between 12 ~ 21 times per minute, their pulses were between 50 ~ 60 times per minute without arrhythmia and there blood pressures were between 81 ~ 90/45 ~ 60mmHg. They were all in severe dehydration. Blood biochemical analyses showed that Na^+ concentration was 130.83 ± 2.89 mmol/L, K^+ concentration was 4.07 ± 0.21 mmol/L, Cl^- concentration was 89.60 ± 3.04 mmol/L, BUN concentration was 14.87 ± 3.03 mmol/L, Cr concentration was 122.66 ± 15.82 mmol/L. After timely treatments with oxygen inhalation and nutrients infusion, the three miners gradually recovered after a week of intensive care.

In order to study the causes of the miraculous survival of these three miners, the study group collected the water drank by them in the mine and sent to Guiyang Mineral Resources Testing Center affiliated to Ministry of Land and Resources of China for analysis. The results indicated that in the water drank by the three miners has high

mineral concentration. Na^+ concentration was 8.018 mmol/L, K^+ concentration was 0.233 mmol/L, Ca^{2+} concentration was 13.65 mmol/L, Mg^{2+} concentration was 13.90 mmol/L and Fe^{2+} concentration was 3.0 mmol/L, In contrast, in the tap water Na^+ , K^+ , Ca^{2+} and Mg^{2+} concentrations were 0.26 mmol/L, 0.06 mmol/L, 3.65 mmol/L and 0.74 mmol/L respectively, whereas Fe^{2+} was under detection limit. In addition, in the water drunk by the three miners, Se concentration is 4.7 $\mu\text{g/L}$ and Zn concentration is 1.12 mg/L, whereas, Se and Zn concentration in the tap water are 1.40 $\mu\text{g/L}$ and 0.5 mg/L respectively.

In order to further investigate the effects of high mineral water on survival, 24 Kunming mice were randomly divided into 2 groups and were deprived of food, only given the water taken from the mine group or the tap water, respectively. The results showed that the average survival days of mouse drinking high mineral water were 7.16 ± 1.58 days. In contrast, the average survival days of mouse drinking tap water were 5.91 ± 0.99 days ($F=6.13$, $p=0.02$).

The average percentages of weight loss (%) of mouse in the two groups were 33.75 ± 7.03 % and 30.75 ± 4.37 % respectively. The percentages of weight loss (%) of mice drinking mine water were higher ($F=5.53$, $p=0.028$).

The experiments demonstrated that drinking water with high mineral mine water had significant effects on the survival rate of mice under complete starvation and noticeably prolong the survival time of mice.

Discussion : Animals in complete starvation are destined to death. However, the causes of death may not be entirely due to exhaustion of energy sources in the body. Emotional, electrolyte disturbance and cardiac insufficiency or failure may also play important roles in the process of their death. The case of successful treatment of these three miners in Qinglong, the analysis of water from mine and the survival experiments of mice have provided evidence for how high mineral water affect human survival limit during complete starvation. It should be further studied that whether drinking water in high concentrations of minerals has long-standing effects on human being.

Statement :

For investigations on humans, informed consents were obtained.

The experimental animals' care was in accordance with Guiyang Medical College guidelines.