Caloric Restriction Review

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Outline

1. Overview of Caloric Restriction

2. Basic Mechanisms

a. oxidative stress

b. inflammation

c. mitochondrial function

d. autophagy

3. Hormonal Factors

a. physiological and neurophysiological mechanisms mediating the benefits of CR in senescence

b. the implications of the findings: for instances, overconsumption or overnutrition is detrimental to aged rats, whereas modest CR would be beneficial; significant decline in physical activity (energy spent) in aged rodents calls for a decrease in caloric intake to balance the energy in-and-out equation;

c. CR beginning in mid or late life will be helpful to temper the extent and harmful consequences of obesity/diabetes, tumors and many neurodegenerative diseases accompanying senescence, etc.

d. translational values and applications.

4. What is CR?

a. optimal diet versus CR

5. Findings in non-human primates

6. Translation to Humans

a. Obesity studies

b. CALERIE

c. Long-term utility

7. Translation to Non-Obese individuals

a. CALERIE Phase-2 study

8. Novel Approaches

a. Intermittent Fasting

b. Energy deficits through exercise

9. Conclusions

I. Overview of Caloric Restriction