

THE ROLE OF CALORIC RESTRICTION IN AGING

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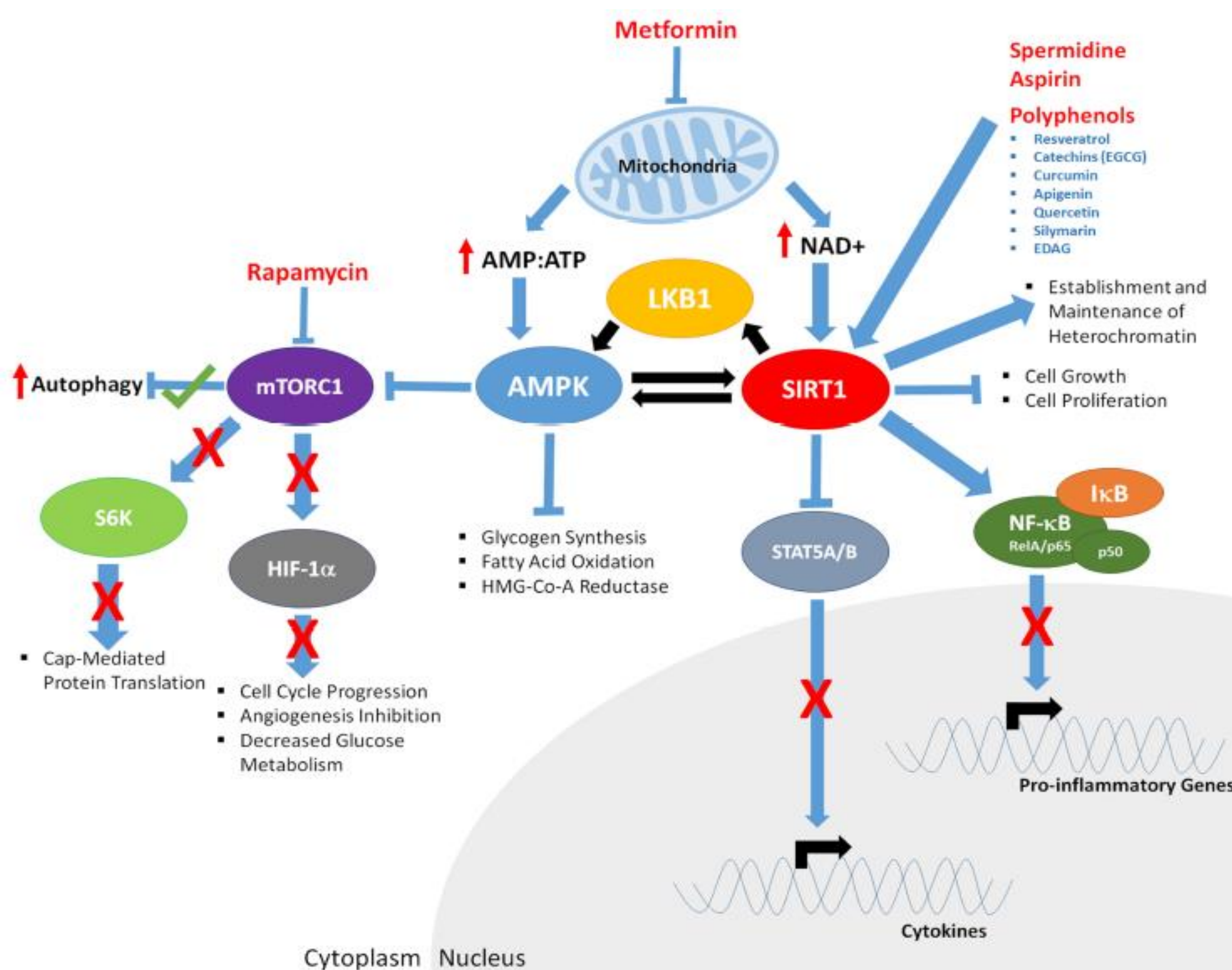
AIMS:

- To describe the difference between caloric restriction (CR) and malnutrition; and the aging concept.
- To explain the metabolic pathways related with aging, and how they are affected by CR.
- To describe the pharmacological mimetics of CR importance.
- To describe the effect of CR in different species.

INTRODUCTION:

- The objective of CR is to promote the maintenance and cell reparation against the growth and cell proliferation.
- Theories of aging:
 - Increment of ROS (*Reactive Oxygen Species*).
 - Increment of circulating glucose and insulin.
 - Hormesis hypothesis.
 - Increment of factors: GH (*Growth Hormone*) and IGF- α (*Insulin-Like Growth Factor-1*).

CR AND MIMETICS EFFECTS IN METABOLIC PATHWAYS ¹:



LIFE-SPAN INCREASE ²:

		Dietary restriction
	Yeast	3-fold
	Worms	2- to 3-fold
	Flies	2-fold
	Mice	30–50%
	Monkeys	Trend noted
	Humans	Not determined

CONCLUSIONS:

- There are many important connections between different metabolic pathways and their factors, such as TOR, AMPK, sirtuins, IGF-1 and GH. These factors are involved in autophagy, and thus, modulate aging.
- The use of mimetic CR drugs can potentially cause an impact on the treatment of different aging-related diseases in an upcoming future.
- It has been demonstrated that CR increases the lifespan in many different species but proof is still pending in primates, therefore more studies need to be conducted.
- It has been shown that CR is able to promote factors which are implicated in tumor suppression and inhibits other factors that are implicated on tumor proliferation.
- It could be interesting to raise awareness about the proven importance of RC to increase life-span in numerous different species, such as humans.

REFERENCES:

- ¹ Gillespie, Z.E., Pickering, J. & Eskiw, C.H., 2016. Better Living through Chemistry: Caloric Restriction (CR) and CR Mimetics Alter Genome Function to Promote Increased Health and Lifespan. *Frontiers in genetics*, 7, p.142.
- ² Fontana, L., Partridge, L. & Longo, V.D., 2010. Extending Healthy Life Span—From Yeast to Humans. *Science*, 328(5976).

