

Induktory autofagie

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08:30 - 10:10 **AUTOFAGIE**

Předsedající: MUDr. M. Káňová, Ph.D., (Ostrava), Doc. MUDr. P. Těšínský (Praha)

Fyziologie autofagie

MUDr. J. Varady (Ostrava)

Autofagie a imunitní odpověď

Doc. MUDr. M. Průcha, Ph.D., (Praha)

Autofagie u kriticky nemocných

MUDr. J. Köppl (Bratislava)

Autofagie a nutriční podpora

Doc. MUDr. J. Firment, Ph.D., (Košice)

Induktory autofagie

MUDr. O. Jor (Ostrava)

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Hladovění

Buněčný stres

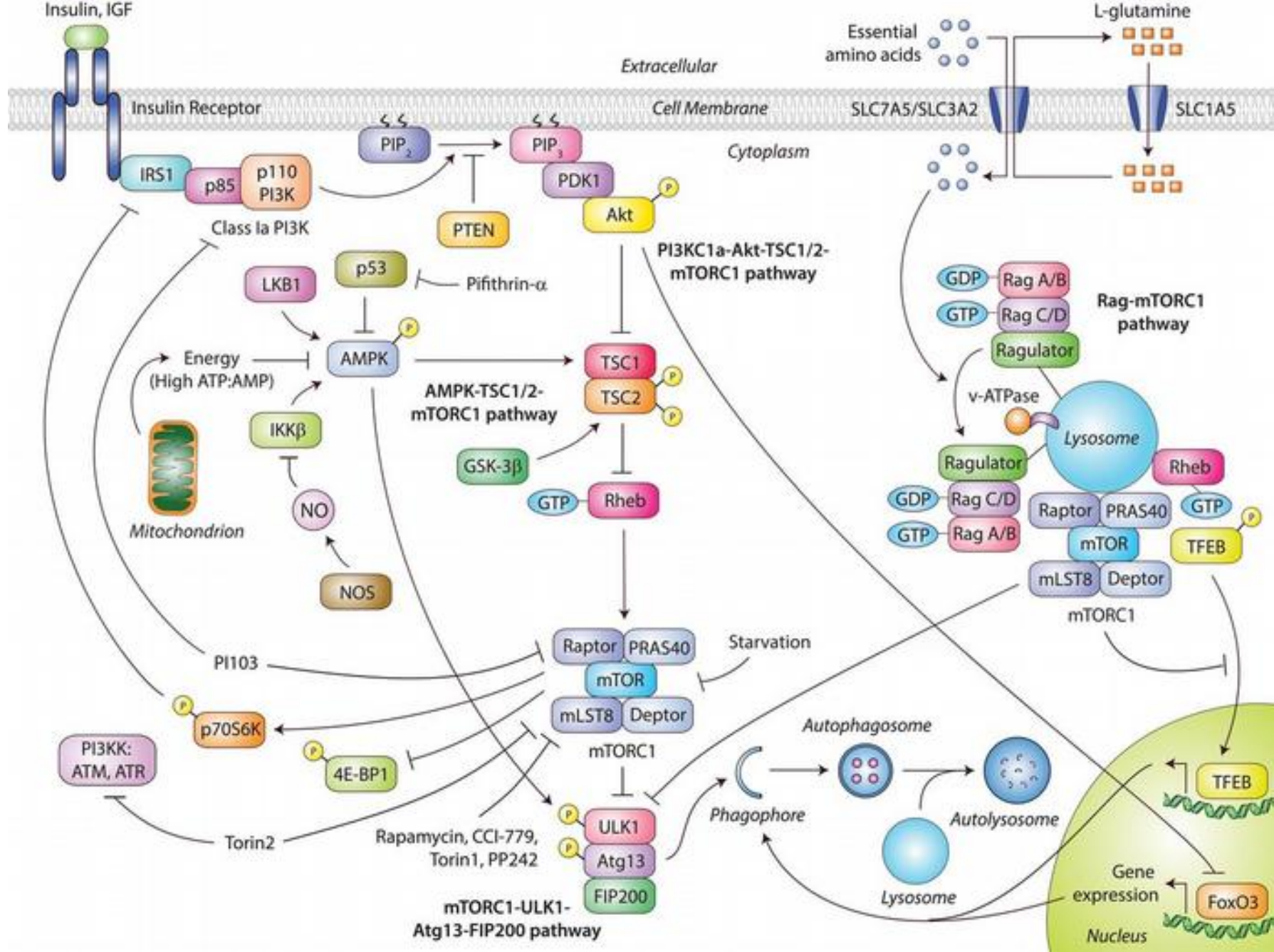


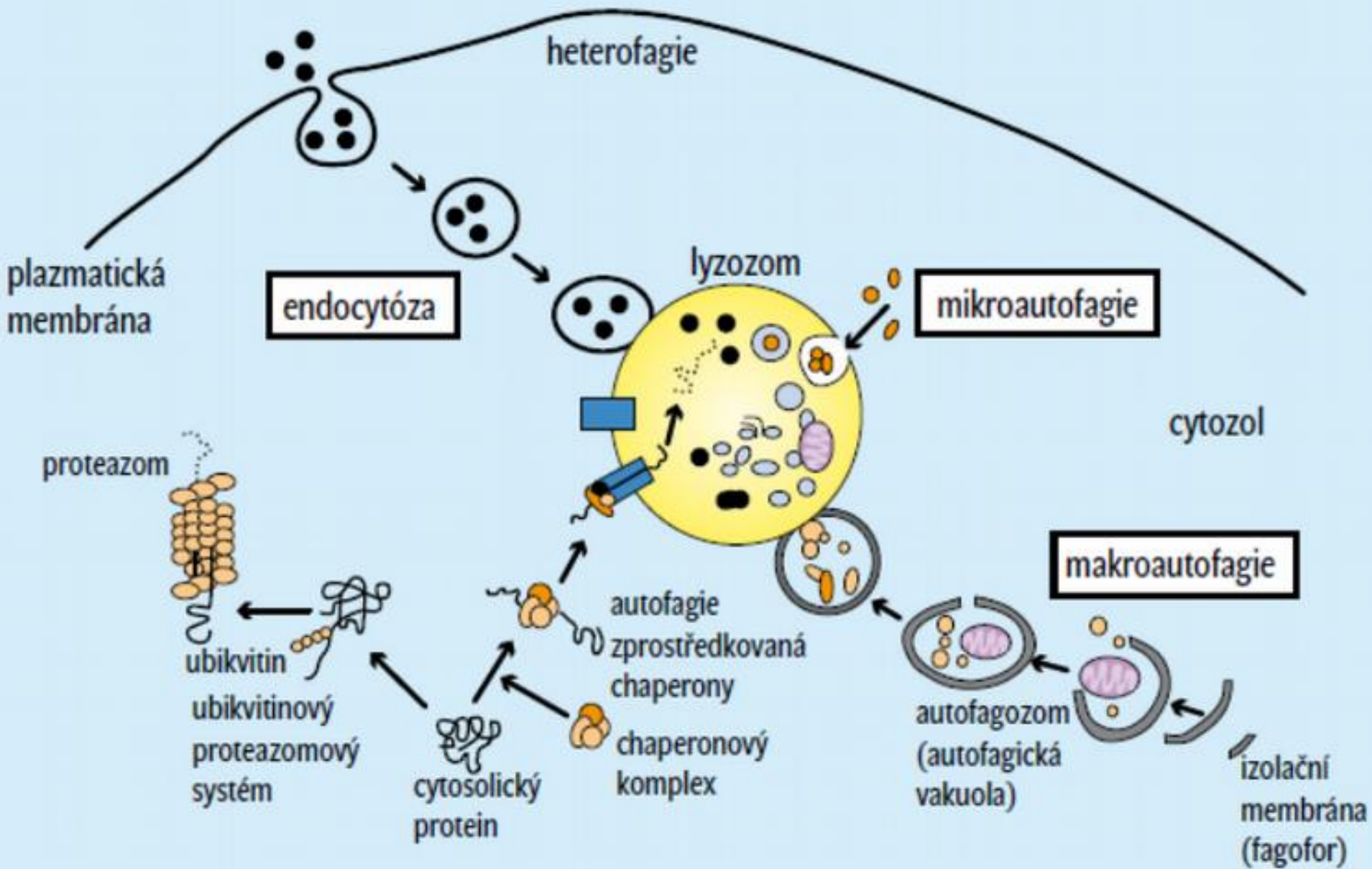
Autofagie



Hypoxie
Hladovění
Oxidační stres
AMP aktivovaná kináza

Inzulín
Výživa
Růstový faktor







Adipokiny

- Adiponektin
 - Zvyšuje citlivost na inzulin
 - ↑ Utilizace MK
 - ↓ Glukoneogeneze
 - Protizánětlivý (↑IL1, IL10)
 - Protektivní vliv na endotel
 - ↓ Oxidativní stres
 - Stimuluje autofagii
 - Snížená hladina u obezity
 - Glitazony (PAD) zvyšují hladinu adiponektinu
- Leptin
 - Ovlivňuje apetit
 - Snižuje citlivost na inzulin
 - Hladina výrazně zvýšená u obezity
 - Vyšší hladina o metabolických a kardiovaskulárních onemocnění
 - Výrazně prozánětlivý (TNF- α , IL6)
 - Tlumí autofagii

Search	Add to builder	Query	Items found	Time
#24	Add	Search Intermittent fasting[Title/Abstract]	404	05:23:02

HP

Health Promotion Perspectives, 2014, 4(1), 77-81

doi: 10.5681/hpp.2014.010

<http://journals.tbzmed.ac.ir/HPP>

Augmented Plasma Adiponectin after Prolonged Fasting During Ramadan in Men

Sadegh Feizollahzadeh¹, Javad Rasuli², *Sorayya Kheirouri³, Mohammad Alizadeh⁴



ELSEVIER

The Journal of Nutritional Biochemistry

Volume 21, Issue 5, May 2010, Pages 413-417



Research article

Cardioprotective effect of intermittent fasting is associated with an elevation of adiponectin levels in rats ☆

Ruiqian Wan ^{a, 1}, Ismayil Ahmet ^{b, 1}, Martin Brown ^a, Aiwu Cheng ^a, Naomi Kamimura ^a, Mark Talan ^b, Mark P. Mattson ^a



Journal of the Academy of Nutrition and Dietetics

Volume 115, Issue 8, August 2015, Pages 1203-1212



Practice Applications

Topics of Professional Interest

Intermittent Fasting and Human Metabolic Health

Ruth E. Patterson PhD, Gail A. Laughlin PhD, Andrea Z. LaCroix PhD, Sheri J. Hartman PhD, Loki Natarajan PhD, Carolyn M. Senger MD, María Elena Martínez PhD, Adriana Villaseñor PhD, Dorothy D. Sears PhD, Catherine R. Marinac, Linda C. Gallo PhD

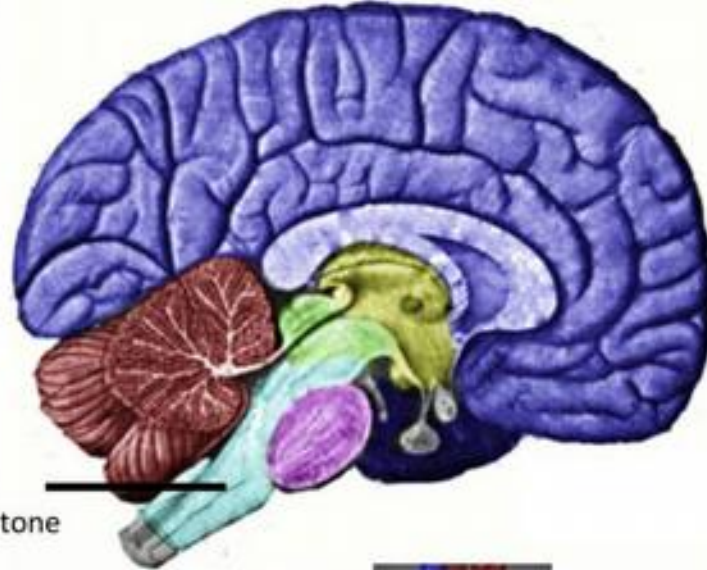
Table. Human intervention studies testing the influence of intermittent fasting regimens on weight and metabolic biomarkers associated with risk of diabetes, cardiovascular disease, and cancer

Author (y)	Sample size (n)	Type of participants	Intervention duration and type of fasting	Comparison group or condition	Weight change	Changes in Fasting Concentrations of Biomarkers		
						Glucoregulatory markers	Lipids	Inflammatory markers
Alternate-day fasting								
Halberg and colleagues (2005) ⁵	8 M ^a	Healthy nonobese	15 d: Alternate-day fasting (20-h fasting intervals)	None	NS ^b	↓ ^c Glucose NS insulin	—	↑ ^d Adiponectin ↓ Leptin NS IL-6 ^e NS TNF-α ^f
Heilbronn and colleagues (2005) ⁶	8 F ^g 8 M	Nonobese adults	22 d: No caloric intake every other day (36-h fasting intervals)	None	↓	NS glucose ↓ Insulin	—	—
Horne and colleagues (2012) ⁷	20 F 10 M	Healthy adults	1 d: Water only (28-h fasting interval)	None	↓	↓ Glucose ↓ Insulin	↑ LDL ^h ↑ HDL ⁱ ↓ TG ^j	NS CRP ^k NS adiponectin
Modified fasting regimens								
Williams and colleagues (1998) ¹²	31 F 23 M	Overweight or obese diabetics	20 wk: 1 d per week fast or 5-d consecutive fasts every 5 wk (400-600 kcal on fasting days) ^l	1,200-1,500 kcal weight-loss diet	↓	NS glucose NS insulin	NS LDL NS HDL NS TG	—
Johnson and colleagues (2007) ¹³	8 F 2 M	Overweight adults with asthma	8 wk: <20% of usual intake on alternate days. Ad libitum diet on nonfasting days	None	↓	NS glucose NS insulin	NS LDL ↑ HDL ↓ TG	NS CRP NS leptin ↓ TNF-α ↓ BDNF ^m
Varady and colleagues (2009) ¹⁴	12 F 8 M	Obese adults	8 wk: Weight-loss diet with alternate-day modified fasting (~25% of total energy needs)	None	↓	—	↓ LDL NS HDL ↓ TG	—
Harvie and colleagues (2011) ¹⁵	107 F	Young, overweight, or obese adults	6 mo: 25% energy restriction 2 d/wk	25% energy restriction 7 d/wk	NS	NS glucose ↓ Insulin	NS LDL NS HDL NS TG	NS CRP NS adiponectin NS leptin NS BDNF
Bhutani and colleagues (2013) ¹⁶	39 F 2 M	Obese adults	12 wk: 25% of energy needs alternating with ad libitum intake	Control group	↓	NS glucose NS insulin	NS LDL NS HDL NS TGs	NS CRP

(continued on next page)

Table. Human intervention studies testing the influence of intermittent fasting regimens on weight and metabolic biomarkers associated with risk of diabetes, cardiovascular disease, and cancer (continued)

Author (y)	Sample size (n)	Type of participants	Intervention duration and type of fasting	Comparison group or condition	Weight change	Changes in Fasting Concentrations of Biomarkers			
						Glucoregulatory markers	Lipids	Inflammatory markers	
Eshghinia and colleagues (2013) ¹⁷	15 F	Overweight or obese	6 wk: 25%-30% energy needs on Saturday, Monday, Wednesday; ad libitum other days	None	↓	—	NS LDL NS HDL NS TG	—	
Harvie and colleagues (2013) ¹⁸	37 F	Overweight or obese women	12 wk: 25% energy restriction 2 consecutive days per week	25% energy restriction all days of week	NS	NS glucose NS HbA1c [†] ↓ insulin	NS LDL NS HDL NS TG	NS adiponectin NS leptin NS IL-6 NS TNF- α	
Varady and colleagues (2013) ¹⁹	22 F 8 M	Normal to overweight adults	12 wk: Weight-loss diet with alternate-day modified fasting (~25% of energy needs)	Control group	↓	—	NS LDL NS HDL ↓ TG	↓ CRP ↑ Adiponectin ↓ Leptin	
Time-restricted feeding									
Carlson and colleagues (2007) ²⁴ Stote (2007) ²⁵	10 F 5 M	Normal weight, middle-aged	8-wk period: 1 meal/d	8 wk of 3 meals/d (crossover design)	↓	↓ glucose NS insulin	↓ LDL ↑ HDL ↑ TG	NS leptin NS resistin NS adiponectin NS BDNF	
LeCheminant and colleagues (2013) ²³	29 M	Normal weight young men	2 wk: Nightly fasting period from 7 pm to 6 am (≥ 11 h)	2 wk of usual nightly fasting interval (crossover design)	↓	—	—	—	



Synaptic plasticity
 Enhanced cognition
 Enhanced neurogenesis
 Reduced inflammation
 Enhanced autophagy

Increased
 parasympathetic tone



Decreased resting heart rate
 Increased heart rate variability
 Decreased blood pressure

Reduced: glucose, insulin, leptin,
 total cholesterol, CRP, TNF α , IL-6,
 markers of oxidative stress, IGF-1

Increased: 3OHB, adiponectin



Review

Impact

Mark

Increased insulin sensitivity
 Ketone body production



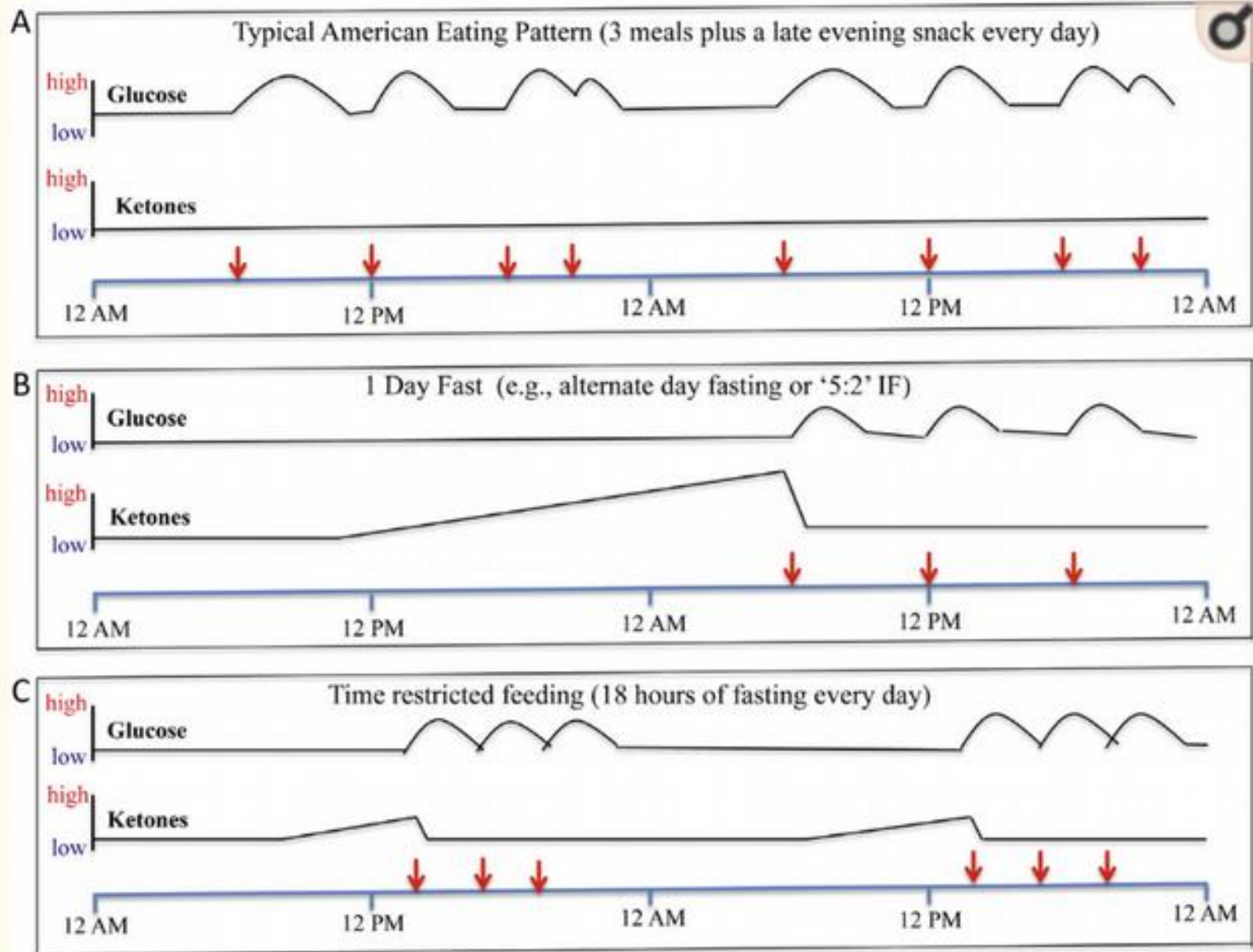
Increased insulin sensitivity
 Enhanced autophagy



Fatty acid mobilization
 Reduced inflammation



5



**V PODSTATĚ NENÍ LEPŠÍ JÍDLO, NEŽ
ŽÁDNÉ JÍDLO 😊**









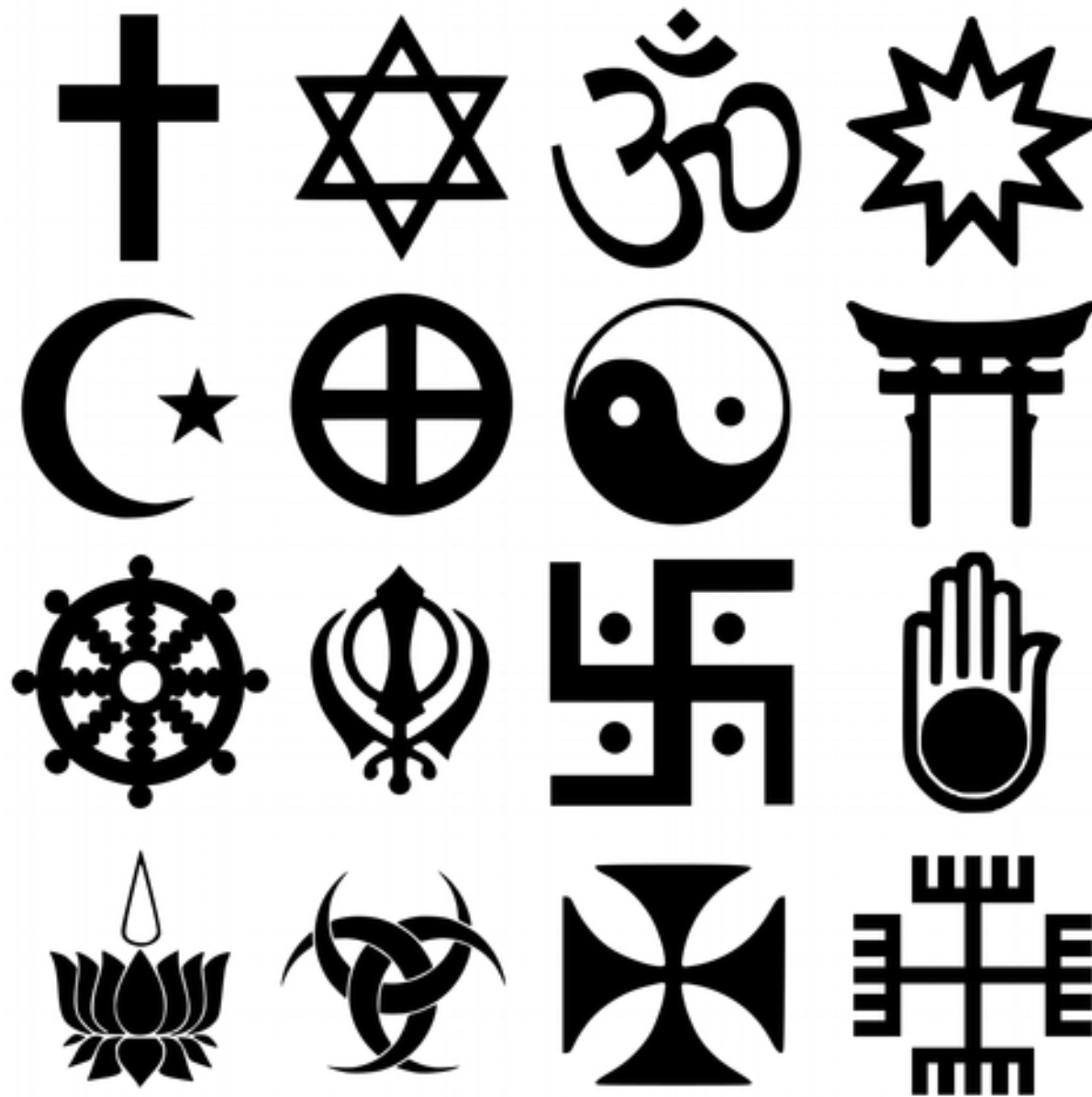




VS

Great ways to **EAT 5** a day!

Breakfast	DRIED FRUIT on cereal e.g. apricots, sultanas, dates, raisins 	glass of PINEAPPLE fruit juice 	A glass of pure juice counts as one portion.
Break	BANANA 	whole APPLE or pile of GRAPES 	Want a snack? Have a piece of fruit instead of a biscuit.
Midday	Eat, rice and BROCCOLI or PEAS 	pitta, or wrap filled with SALAD e.g. cucumber, tomatoes, carrot, peppers, white cabbage 	Top a pizza with peas, peppers, mushrooms, sweetcorn.
Teatime	whole ORANGE 	FRUIT salad 	Add fresh or canned fruit to a jelly.
Evening meal	chicken and pasta in a TOMATO sauce with GREEN BEANS 	SWEETCORN 	Eat a side salad with your meal - it's an extra portion.



رمضان كريم

Ramadan Kareem



Thomas DeLauer



Minnesota starvation experiment



Hladovění

Krátkodobé (<48 hodin)

- Makroautofagie
- Nespecifický proces

Dlouhodobé (>48 hodin)

- Chaperon – mediated autophagy
- Specifická
- Označené „staré a poškozené“ struktury

Autofagie jede



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Autophagy & Intermittent Fas 4:13

Guy: We need to stop testing our products on animals

Boss: Why? Shampoo companies do it all the time

Guy: **Děkuji za pozornost**



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