Promising New Approaches to Clinical Interventions Aimed at Reducing Obesity and Preventing Progression and Complications of Diabetes

Overview

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Medical Complications of Obesity

- Coronary Heart Disease & Stroke
- Insulin resistance
  - B-cell failure (Diabetes)
- Atherogenic Dyslipidemia
- Nonalcoholic fatty liver disease
- Immune System
- Pulmonary disease
- Hypertension
- Gall bladder disease
- Gastroesophageal reflux disease
- Gynecologic abnormalities
- Osteoarthritis
- Gout
- Phlebitis
- Venous stasis
- Cancer
- Cognitive dysfunction

Why do people become obese?
Why is excess body fat bad?
Why is weight loss good?
Best ways to prevent excessive weight gain & produce meaningful weight loss?
Regulation of Food Intake

Brain

Modulating Factors
- Liking (palatability)
- Wanting (reward/addiction)
- Emotions
- Cues, habits, stress, portion size
- Environment/Lifestyle
- Circadian rhythms
- Executive Function (frontal cortex)

Neurochemicals
- **Stimulate**
  - NPY
  - AgRP
  - Orexin-A
  - MCH
  - Cannabinoids
- **Inhibit**
  - POMC
  - CART
  - α-MSH
  - CRH
  - Oxytocin
  - GLP-1
  - NE/CCK

Episodic & Tonic signals
- Glucose (GLUT 1), FFA, AA
- CCK, GLP-1, PYY
- Oxyntomodulin
- Vagal afferents
- Insulin, Glucagon
- PP, Amylin
- Leptin
- Ghrelin
- Cortisol
- Gut bacteria

Peripheral Organs
- GI Tract
- Adipose
- Adrenals
- Eyes, nose, tongue, ears

Food intake
(type/amount)

86 billion neurons
More oligodendrocytes, microglia and astrocytes
>100 neurotransmitters

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Obesity Treatment Pyramid

- Surgery
- Endoscopic Therapy?
- Pharmacotherapy
- Lifestyle Modification
- Diet
- Physical Activity
KOSHERLAND
A Jewish child's first game