Weight loss at high altitude.

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Loss of appetite and weight are frequently observed at altitudes above 5000 m. However, the pathophysiology behind changes in body composition at extreme altitude is still not fully understood. Proper acclimatization to altitude and high caloric intake minimizes, but can not completely prevent significant weight loss under the influence of hypobaric hypoxia.

The discovery of leptin in 1994 has initiated a new research area investigating molecular networks that connect peripheral organs with the central nervous system to sense and regulate energy intake as well as energy expenditure.

Since then, a whole microcosm of new hormones, neurotransmitters and receptors has been discovered and studied with respect to body weight control. Those agents include neuropeptide Y (NPY), agouti-related protein (AGRP), melanocortin receptors (MC-R), cocaine-amphetamine regulated transcript (CART), pro-opiomelanocortin (POMC), orexin A and B (hypocretins), melanin-concentrating hormone (MCH) and ghrelin (endogenous ligand of the growth hormone secretagogue receptor).

This overview will introduce the current concepts of the molecular control of energy homeostasis and attempt to reexamine the effects of altitude on appetite and body composition in light of these concepts. An overview of studies on changes of appetite and body composition at high altitude will be followed by the presentation of recent data on changes of endocrine parameters at hypobaric hypoxia that could be involved in the pathophysiology of weight loss.