Development of Novel Anti-Obesity Immunoglobulins for Immunoprophylaxis and Therapy

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Abstract:

Background:

Obesity is one of the largest and fastest growing public health problems in the world. The pharmacological ooptions for obesity treatment remain quite limited. Recently, one of the potential exciting research areas is the development of innovative therapeutic molecular vaccines and immunoglobulins.

Objectives:

Here, we aimed to develope novel immunoglobulins against obesity containing anti-ghrelin O-acyltransferase (GOAT) IgY to block the activity of the appetite-stimulating hormone “ghrelin”.

Methods:

We developed anti-GOAT immunoglobulins using IgY technology. Its preliminary pre-clinical evaluation was applied into 3 mice groups, (A) was fed standard pellet chow, (B) was fed a high-fat diet with metabolizable energy contents of 13% kcal from fat and (C) was fed a high-fat diet with metabolizable energy contents of 45% kcal from fat.

Results:

Oral immunization with this biologic successfully induced beneficial responses that attenuated body weight gain by decreasing food intake and increasing energy expenditure.

Conclusion:

Anti-GOAT IgY is a promising approach for the treatment of obesity by oral administration but further studies are still required before entry into clinical trials as its effect on physical activity and visceral adipose tissue.

Keywords:

Obesity, Immunoglobulins, IgY, Biotherapy, Ghrelin, Ghrelin O-acyltransferase, Oral immunization.