

# Pheophorbide a isolated from *Gelidium amansii* inhibits adipogenesis by down-regulating adipogenic transcription factors in 3T3-L1 adipocytes

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## Abstract

**Background:** Adipocyte lipid accumulation causes adipocyte hypertrophy and adipose tissue increment, leading to obesity. Thus, this study investigated the anti-adipogenic effects of pheophorbide A isolated from *Gelidium amansii* in 3T3-L1 adipocytes. **Methods:** Upon differentiation of 3T3-L1 pre-adipocytes into adipocytes, they were treated with pheophorbide A. **Results:** Pheophorbide a inhibited triglyceride accumulation and stimulated glycerol release in a dose-dependent manner in 3T3- L1 adipocytes. In addition, pheophorbide A significantly decreased leptin levels in 3T3-L1 adipocytes. Pheophorbide A inhibited adipogenesis via suppression of the expression of adipogenic transcriptional factors including peroxisome proliferator-activated receptor enhancer binding protein sterol regulatory element binding protein 1c (SREBP1c), and fatty acid synthase (FAS). It also induced the expression of phosphorylation of AMP-activated protein kinase (AMPK). **Conclusion:** Pheophorbide A isolated from *Gelidium amansii* inhibit adipogenesis by down-regulating adipogenic transcription factors in 3T3-L1 adipocytes. These results suggest that pheophorbide A may be useful for the prevention or treatment of obesity owing to its inhibitory effect on adipogenesis.

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## Biography

Ji Sook Han is a Professor and is doing research on developing a bioactive compound from natural plants, especially seaweeds, and investigating its effect for the prevention and treatment of obesity and type 2 diabetes. The active compound containing in seaweeds may be a good anti-diabetic source by improving insulin secretory defect or

insulin resistance. It may also be a potential anti-obesity source owing to its inhibitory effect on adipogenesis. She evaluates the effect and mechanism of a bioactive compound isolated from natural plant through in vitro and in vivo study.