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## Effect of Celery Extract on Thyroid Function; Is Herbal Therapy Safe in Obesity?

[Mohammad Bagher Maljaei](#),<sup>1,2,3,4</sup> [Seyedeh Parisa Moosavian](#),<sup>2,3</sup> [Omid Mirmosayyeb](#),<sup>2,5</sup>  
[Mohammad Hossein Rouhani](#),<sup>3</sup> [Iman Namjoo](#),<sup>3</sup> and [Asma Bahreini](#)<sup>2</sup>

<sup>1</sup>Department of Nutrition, School of Public Health, Iran University of Medical Sciences, Tehran, Iran

<sup>2</sup>Department of Neurology, Isfahan Neuroscience Research Center, Alzahra Research Institute, Isfahan University of Medical Sciences, Isfahan, Iran

<sup>3</sup>Department of Community Nutrition, Food Security Research Center, School of Nutrition and Food Sciences, Isfahan University of Medical Sciences, Isfahan, Iran

<sup>4</sup>Student Research Committee, Iran University of Medical Sciences, Tehran, Iran

<sup>5</sup>Medical Student Research Committee, School of Medicine, Isfahan University of Medical Sciences, Isfahan, Iran

**Address for correspondence:** Dr. Mohammad Bagher Maljaei, Department of Nutrition, School of Public Health, Iran University of Medical Sciences, Tehran, Iran. E-mail: [mbmaljaie@gmail.com](mailto:mbmaljaie@gmail.com)

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### Abstract

Celery (*Apium graveolens*) is a popular medicinal herb that used conventionally for the treatment of different diseases. This report aimed to demonstrate celery would induce hyperthyroidism after oral celery extract consumption for weight loss. A 36-year-old female patient came to our clinic with blurred vision, palpitation, and nausea. Dietary history showed that she used 8 g/day of celery extract in powder form for weight reduction. Weight loss during 78 days of celery extract consumption was 26 kg. Thyroid function test showed that serum level of thyroid-stimulating hormone (TSH) and T4 were 0.001 mIU/L and 23 ng/dl, respectively). Grave's and thyrotoxicosis ruled out by other laboratory evaluations. Methimazole 10 mg/day was prescribed. Serum level of TSH was evaluated. The celery extraction intake was discontinued when started treatment with methimazole. Not found any thyroid stimulator (thyroxin and other) in celery extraction. We concluded that observed hyperthyroidism and allergic reaction may be induced by celery extract consumption. Therefore, it is possible that hyperthyroidism may be a side effect of frequent celery extract consumption.

**Keywords:** *Apium graveolens*, hypersensitivity, hyperthyroidism, obesity, thyroid gland

### Introduction

Herbal medicine, also called botanical medicine, is being used increasingly worldwide.[1,2] Many people believe that herbal medicine has no side effects and therefore, they have a tendency to use herbs as an alternative medicine.[3] However, using herbs may result in potentially dangerous side effects such as hepatotoxicity, nephrotoxicity, and altered thyroid function.[4]

Celery (*Apium graveolens*), is a herb from the family of Apiaceae. Celery is a good source of conventional antioxidant nutrients including Vitamin C, riboflavin, Vitamin B6, pantothenic acid, beta-carotene, and manganese. Furthermore, it demonstrates both anti-inflammatory and antioxidant activities. Celery can be used for its antihypertensive, diuretic, anti-fungal, anti-obesity, anticonvulsant, anticarcinogenic, hepatoprotective effects, and also decrease the toxicity of several medications.[5,6,7,8,9] Besides these advantages, potential side effects of celery should be taken into account. Celery may have side effects including the severe allergic reactions and anaphylactic shock.[10]

This report aimed to demonstrate a celery-induced hyperthyroidism after oral celery extract consumption for weight loss.

## Case Report

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A 36-year-old female with blurred vision, palpitation, and nausea was referred to the clinic. Sweating, exophthalmos, and skin rash on her right and left arms were revealed in physical examination. Medical history showed that she experienced weight gaining after her second delivery (primary weight: 107 kg). Dietary history showed that she used 8 g/day of celery extract powder for weight reduction. Weight loss during 78 days of celery extract consumption was 26 kg (from 107 to 81 kg). Thyroid function test showed that serum level of thyroid-stimulating hormone (TSH) and T4 were 0.001 mIU/L and 23 ng/dl, respectively. Furthermore, result of thyroid scan was normal. Other differential diagnoses including thyroiditis, Grave's and thyrotoxicosis ruled out by other laboratory evaluations and methimazole was prescribed (10 mg/day). After 20 days of intervention, the serum level of TSH was 0.025 mIU/L. TSH was increased to 0.2 mIU/L after 40 days of intervention. Therefore, the dosage of methimazole reduced to 5 mg/day. Serum level of TSH reached to 0.6 after 57 days. Methimazole discontinued and she followed-up for 2 months. Her thyroid function tests and thyroid ultrasound reported normal. General health was good, and no sign and symptom was observed. The celery extraction intake was discontinued when started treatment with methimazole. Not found any thyroid stimulator (thyroxin and other) in celery extraction.

## Discussion

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As the function of the thyroid was normal before celery consumption, we suppose that observed hyperthyroidism was induced by celery extract. Furthermore, reported weight loss during celery extract consumption can be attributed to hyperthyroidism. Celery extract in powder form is conventionally used as an anti-obesity product. Furthermore, there is a huge advertising regarding the anti-obesity effect of celery.

The patient reported that skin rash and eruptions appeared on her body after using celery. This may be attributed to its allergic reactions.[11,12] According to previous experimental studies, celery affects thyroid function.[13] The results of the present study are consistent with results of the reported case by Rouhi-Boroujeni *et al.*[14] Therefore, we recommend that celery extract should not be used in patients with hyperthyroidism. Furthermore, thyroid function should be assessed in subjects who consume celery extract.

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Nil.

## Conflicts of interest

There are no conflicts of interest.

## References

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1. Enioutina EY, Salis ER, Job KM, Gubarev MI, Krepkova LV, Sherwin CM, et al. Herbal medicines: Challenges in the modern world. Part 5. Status and current directions of complementary and alternative herbal medicine worldwide. *Expert Rev Clin Pharmacol*. 2017;10:327–38. [PubMed: 27923318]
2. Barrett B, Kiefer D, Rabago D. Assessing the risks and benefits of herbal medicine: An overview of scientific evidence. *Altern Ther Health Med*. 1999;5:40–9. [PubMed: 10394673]

3. Liu JP, Zhang M, Wang W, Grimsgaard S. Chinese herbal medicines for type 2 diabetes mellitus. *Cochrane Database Syst Rev*. 2004 DOI: 10.1002/14651858:CD003642. [PubMed: 15266492]
4. de Boer YS, Sherker AH. Herbal and dietary supplement-induced liver injury. *Clin Liver Dis*. 2017;21:135–49. [PMCID: PMC5117680] [PubMed: 27842768]
5. Rehman A, Ishaq H, Furqan M, Sheikh D, Raza ML, Naqvi BS, et al. Comparative study of ethanolic and aqueous extracts of *Apium graveolens* L. root with furosemide for its diuretic activity and excretion of urinary metabolites in Wistar rats. *Science International*. 2016;28:2503–7.
6. Tyagi S. Medical benefits of *Apium graveolens* (celery herb) *J Drug Discov Ther*. 2013;56:558–69.
7. Hostetler G, Riedl K, Cardenas H, Diosa-Toro M, Arango D, Schwartz S, et al. Flavone deglycosylation increases their anti-inflammatory activity and absorption. *Mol Nutr Food Res*. 2012;56:558–69. [PMCID: PMC4070292] [PubMed: 22351119]
8. Jakovljevic V, Raskovic A, Popovic M, Sabo J. The effect of celery and parsley juices on pharmacodynamic activity of drugs involving cytochrome P450 in their metabolism. *Eur J Drug Metab Pharmacokinet*. 2002;27:153–6. [PubMed: 12365194]
9. Sadati SN, Ardekani MR, Ebadi N, Yakhchali M, Dana AR, Masoomi F, et al. Review of scientific evidence of medicinal convoy plants in traditional Persian medicine. *Pharmacogn Rev*. 2016;10:33–8. [PMCID: PMC4791985] [PubMed: 27041871]
10. Pałgan K, Götz-Żbikowska M, Tykwińska M, Napiórkowska K, Bartuzi Z. Celery – Cause of severe anaphylactic shock. *Postepy Hig Med Dosw (Online)* 2012;66:132–4. [PubMed: 22470187]
11. Popescu FD. Cross-reactivity between aeroallergens and food allergens. *World J Methodol*. 2015;5:31–50. [PMCID: PMC4482820] [PubMed: 26140270]
12. Sausenthaler S, Koletzko S, Schaaf B, Lehmann I, Borte M, Herbarth O, et al. Maternal diet during pregnancy in relation to eczema and allergic sensitization in the offspring at 2 y of age. *Am J Clin Nutr*. 2007;85:530–7. [PubMed: 17284754]
13. Kooti W, Ali-Akbari S, Asadi-Samani M, Ghadery H, Ashtary-Larky D. A review on medicinal plant of *Apium graveolens*. *Adv Herbal Med*. 2015;1:48–59.
14. Rouhi-Boroujeni H, Hosseini M, Gharipour M, Rouhi-Boroujeni H. Is herbal therapy safe in obesity? A case of *Apium graveolens* (Celery) induced hyperthyroidism. *ARYA Atheroscler*. 2016;12:248–9. [PMCID: PMC5403020] [PubMed: 28458701]

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