



ORIGINAL ARTICLE

# A Histamine-Free Diet Is Helpful for Treatment of Adult Patients with Chronic Spontaneous Urticaria

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**Table 1.** Example of an experimental menu: a histamine-free diet

	Breakfast	Lunch	Dinner
1st day	White rice Bean sprouts soup Bulgogi Soy sauce braised potatoes Seasoned Chamnamul	Rice with sorghum Fish cake soup Grilled yellow croaker Balloon flower root salad Seasoned bean sprouts	White rice Dried pollack soup Grilled tofu Steamed egg Bracken salad
2nd day	White rice Egg soup with chives Steamed tofu Stir-fried shitake Grilled sweet pumpkin salad	Rice with millet Radish soup with mussel Stir-fried mushroom Steamed egg Seasoned pigweed	White rice Radish soup with beef Grilled yellow croaker Black bean boiled in soy sauce Green pumpkin salad
3rd day	Cereal flakes Milk	Rice with pea Potato hand-pulled dough soup Grilled beef Grilled tofu Stir-fried fish cake and vegetables	White rice Soft tofu stew Grilled sole Cucumber salad Soy sauce braised potatoes
4th day	White rice Soft tofu stew Steamed egg Seasoned acorn jelly salad Seasoned water parsley	White rice Tteokguk with beef Grilled pomfret Seasoned aster Stir-fried chopped potato	White rice Hot bean sprouts soup Bulgogi Steamed egg Seasoned pigweed
5th day	White rice Radish soup with perilla Grilled yellow croaker grilled deodeok root Seasoned bean sprouts	White rice Egg soup Grilled tofu Seasoned green pumpkin Seasoned perilla leaf	White rice Codfish soup Grilled beef Grilled tofu Cucumber salad
6th day	Rice with sorghum Beef bone soup Grilled tofu Lettuce wrap Broiled parsley	White rice Bean sprouts soup Bulgogi Cucumber salad Seasoned pepper and lettuce	White rice Fish cake soup Steamed soft soybean curd Radish salad Lotusroot boiled in soy sauce
7th day	Toast Soymilk or milk	White rice Chilled cucumber soup Steamed soft soybean curd Black bean boiled in soy sauce Radish salad	White rice Bean sprouts soup Bulgogi Soy sauce braised potatoes Seasoned Chamnamul

Please use as small amounts of seasonings as possible. Season with salts, vinegar and ground pepper rather than soy sauce, soybean paste and red pepper paste.

Please avoid boiling in soy sauce. Boiling is recommended than grilling.

Menu is exchangeable. For balanced diet, divide foods to rice, main dish and side dishes and menu change should be done within same division (ex. White rice can be exchanged to rice with sorghum or rice with pea, not to bulgogi which is considered as main dish).

Pan-frying and deep-frying is possible (ex. Pan-fried beef meat bal, pumpkin pancake, sweat and sour beef, deep-fried lotus root and deep fried eggplant).

### The effect of the histamine-free diet on the clinical severity of chronic urticaria

The baseline USS was  $25.023 \pm 11.433$  (range, 7.5 ~ 15.4). The UAS (UAS7) of the first week was  $10.263 \pm 9.216$  (range, 0 ~ 34). After four weeks of histamine-free diet, USS was  $16.227 \pm 12.794$  (range, 0.5 ~ 42; Fig. 1) and UAS was  $4.056 \pm 4.143$  (range, 2 ~ 21; Fig. 2). The scores of USS and UAS were quite low and reflect that antihist-

amines for these patients were continuously prescribed. These measures were reduced after histamine-free diet and statistically significant ( $p=0.010$  and  $0.006$ , respectively). In the case of UAS, the scores of week 2 and week 3 were reduced to  $7.895 \pm 9.014$ ,  $7.278 \pm 9.134$ , respectively. They were all statistically significant ( $p=0.004$  and  $0.003$ ) (Fig. 2).

tive to reduce symptoms from histamines. Because there are many adult CU patients who seemed to suffer symptoms related to foods in Korea, and because a histamine free diet is a harmless treatment, this study is meaningful as evidence of the value of a therapeutic histamine-free diet. Additional further studies with longer duration of strict histamine-free diets may be needed in patients who have been using the conventional drugs with adjusted dose and duration.

We evaluated the effect of a histamine-free diet for four weeks for 22 adult patients with CU. In this study, there were significant clinical improvements in urticaria severity and the plasma histamine level was significantly reduced after the histamine-free diet. Even if the number of drugs used was not reduced and plasma DAO activity was not changed, a histamine-free diet cannot be said to be ineffective because it has resulted in a USS or UAS change that can be linked to the quality of life of the patient. The significance of this study is that it provides practical confirmation of the effectiveness of safe adjuvant therapy without major side effects. Thus, a histamine-free diet can be considered an applicable additional therapy for CU.

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## SUPPLEMENTARY MATERIALS

Supplementary data can be found via <http://anndermatol.org/src/sm/ad-30-164-s001.pdf>.

## CONFLICTS OF INTEREST

The authors have nothing to disclose.

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**Supplementary Table 1.** The food ranking of histamine level studied by our previous study

Name:                      Regeister number:                      Gender:                      Age:  
 \*Histamine is one of the causes of urticaria. Below is schematic table showing the histamine level of each food. You are advised to avoid foods with high histamine level which is in the upper side of the column.

		Histamine level of food						
		Fishery products	Meat products	Eggs	Fermented food	Vegetables	Dairy products	Etc.
Higher level	Grilled anchovy Grilled pacific saury		Pork Grilled sausage and ham		Red pepper paste Soybean paste	Spinach Fermented radish kimchi		
	Grilled mackerel		Chicken			Fermented cabbage kimchi	Cheese	Toasted laver
	Grilled hairtail		Raw sausage and ham					
	Can of tuna Boiled ahcnovy Boiled shrimp							
50 ng/g	Dried anchovy Boiled pacific saury							Raw laver
	Grilled Spanish mackerel							
	Boiled hairtail		Grilled beef					
	Squid		Boiled beef					
	Boiled mackerel		Raw beef	Boiled egg		Carrot	Milk	
	Boiled Spanish mackerel			Raw egg		Onion		
Lower level						Raw cabbage and radish		

Be aware that fermented foods (ex. Soybean paste, red pepper paste, kimchi, yogurt, cheese) contain high level of histamine, and please avoid them.

Also, fast foods, tomato, nuts including peanut, alcohols including wine, green tea, chocolate, grape, banana, strawberry, citrus fruits such as lemon and orange should be restricted.