**TURKISH INFLAMMATORY BOWEL DISEASE SOCIETY RECOMMENDATIONS ON SELECTED TOPICS OF ULCERATIVE COLITIS**
*TÜRK İNFLAMATUVAR BARSAK HASTALIKLARI DERNEĞİNİN ÜLSERATİF KOLİT İLE İLGİLİ SEÇİLMİŞ KONULARDA ÖNERİLERİ*

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# Ulcerative colitis and diet

*Ülseratif kolit ve diyet*

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## INTRODUCTION

The relationship between ulcerative colitis (UC) and diet has been a matter of interest for both physicians and patients since the earliest times in history (1,2). However, it has not been possible to establish a certain etiological relationship between UC and diet due to individual differences in food tolerance as well as regional and ethnic dietary differences. Similarly, the effects of food and various dietary regimens on disease activity have not been established sufficiently because of the inadequacy of population-based, long-term and comparative studies on this issue.

## MATERIALS AND METHODS

In this study, we investigated whether dietary regimens or food products affected the development of disease. In this regard, we searched, using a 3e systematic literature search, studies about the effects of diet on achievement of disease remission, maintenance of remission and development of relapse, and we analyzed the results of this search.

## RESULTS

Forty-five studies were analyzed on the place of diet and food products in the etiology of UC, in addition to the relationship between disease activity and diet (Table 1). Odds ratio (OR) was determined regarding the positive or negative effects of the food products or dietary regimens used in these studies on disease development and activity.

An evaluation of the studies on the effects of diet and food products on disease development demonstrated that breast-milk and a diet rich in vegetables and fruit as well as vitamin C were protective against the development of UC (3-5). Food products that provoke the development of UC include cow's milk in allergic individuals, n-6 fatty acids, processed red meat, refined sugars, food with high sulfide content, fatty foods, and 'fast food' (6-9) (Table 2).

An analysis of studies on the effects of dietary regimens and food products on disease activity has shown that consumption of fish fat (n-3 fatty acids) and soluble fibers during active disease phases influenced disease activity positively. It is possible to propose that processed red meat, alcoholic beverages, milk and milk products, refined sugars, fatty products, and foods with high sulfide content affect disease activity negatively (10-12) (Table 3).

## CONCLUSION

Currently, there are no dietary regimens or food products proven to trigger the development of UC, although various dietary and food products have been cited in the development of UC in the European Crohn's and Colitis Organisation (ECCO) guidelines (13). However, it has been noted that a western type of nutrition is prevalent in populations of Western Europe and Northern America, where inflammatory bowel diseases (IBDs) are common. On the other hand, nutrition products of Far Eastern societies, where IBDs are much rarer, consist mostly of vegetable-based and natural food products. However, the prevalence of IBD is increasing throughout the world in parallel to the consumption of fatty, refined and 'fast food' products (6,14,15).

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N-3 fatty acids are the most important among the food products that are considered to affect disease activity positively. Studies on fish fat and n-3 fatty acids have shown that these food products might have positive effects on disease activity, mucosal healing, achievement of remission, or prevention of relapses (16-18). However, a Cochrane analysis evaluating fish fat and n-3 fatty acids has suggested that the potential positive effects of fish fat and n-3 fatty acids on UC did not reach statistical significance (19).

Products with fiber content are one of the most discussed issues in the context of UC and diet. Fibers consist of two parts, as soluble and insoluble. It is known that insoluble fibers shorten the duration of colonic transit time. In addition, it has been reported that gases resulting from incomplete degradation of these insoluble fibers by floral intestinal bacteria might lead to potential adverse consequences in UC patients. Therefore, patients should avoid diet regimens rich in insoluble fibers during active disease periods. Soluble fibers are a different issue. There are studies suggesting that food products rich in soluble fibers, particularly germinated barley food stuff and seeds of the plantago ovata plant, might have positive effects in UC patients (20-22). It is known that short-chain fatty acids such as butyrate, which is a degradation product of soluble fibers, have positive effects on colonocytes. In addition, studies on short-chain fatty acids including butyrate have shown that these products have positive effects on disease activity, reduction of relapses and mucosal healing (23-25).

Unfortunately, there is a misconception regarding the consumption of milk and milk products in patients with UC, and this misconception leads to life-long deprivation among most UC patients of milk and milk products (26). Indeed, there is no difference in terms of the prevalence of lactose intolerance between patients with UC and healthy individuals. Transient lactose intolerance develops only in UC patients in the exacerbation period. As a result, restriction of milk and milk products is not deemed as a rational attitude in patients in remission. However, exclusion of milk and milk products from the diet might be suggested in active disease periods in patients with symptoms of lactose intolerance. There are also studies recommending the use of lactose-free products or external supplementation of lactase enzyme in people with lactose intolerance (27,28).

Since most proteins are essential constituents of the human body and play a role in several metabolic processes, prohibition or restriction of these fo-

**Table 1.** Types of studies analyzed

| | |
|---|---|
| Review | 18 |
| Prospective study | 13 |
| Retrospective study | 5 |
| Case Control study | 1 |
| Randomized controlled study | 8 |

**Table 2.** The food products that increase or decrease the ulcerative colitis risk

| Food products that decrease the ulcerative colitis risk | Food products that increase the ulcerative colitis risk |
|---|---|
| Breast-feeding, OR: 0.77 (95% CI, 0.61-0.96) | Cow's milk allergy, OR: 1.51 (95% CI, 2.46-0.92) |
| Vegetables and fruits, OR: 0.60 (95% CI, 0.3-1.3) | n-6 fatty acids, OR: 2.49 (95% CI=1.23-5.07) |
| Vitamin C, OR: 0.45 (95% CI, 0.21-0.99) | Red meat, OR: 1.99 (95% CI, 0.84-4.72) |
| | Refined sugar, OR: 2.52 (95% CI, 1.02-6.23) |
| | Sulphur-containing foods, OR: 2.76 (95% CI, 1.19-6.4) |
| | High-fat and "fast" foods, OR: 2.64 (95% CI, 1.29-5.39) |

OR: Odds ratio. CI: Confidence interval.

**Table 3.** Diet regimens and foods affecting disease activity

| Foods having beneficial effects on disease activity | Foods having untoward effects on disease activity |
|---|---|
| Fish oil (n-3 fatty acids), OR: 0.90 (95% CI, 0.34-2.38) | Red meat, OR: 3.20 (95% CI, 1.3-7.8) |
| Soluble fibers, OR: 0.88 (95% CI, 0.34-2.29) | Alcoholic beverages, OR: 2.71 (95% CI, 1.1-6.67) |
| | Milk and dairy products, OR: 1.33 (95% CI, 0.60-2.97) |
| | Refined sugar, OR: 1.29 (95% CI, 0.58-2.87) |
| | High-fat foods, OR: 2.52 (95% CI, 1.06-5.97) |
| | Sulphur-containing foods, OR: 2.6 (95% CI, 1.08-6.3) |

OR: Odds ratio. CI: Confidence interval.

od products is wrong. However, patients with UC might be recommended to consume animal proteins that contain complete proteins with essential amino acids, particularly in active periods of the disease (29,30). It is known that a diet rich in fat and carbohydrates might lead to an increase in the number of defecations as well as bowel distention in active disease periods of UC. This negative effect is particularly significant with refined sugars. Therefore, it would be a correct attitude to prefer a diet with low fat and refined sugar in active disease periods (10,11).

***Recommendation:***

*No diet or food product can serve as a curative or primary treatment in ulcerative colitis.* ***(EL 5, RG D)***

*No dietary regimen or food product alone can lead to the development of ulcerative colitis.* ***(EL 5, RG D)***

*It might be recommended to consume a diet rich in animal proteins and soluble fibers and poor in fat, simple sugars and insoluble fibers in active periods of disease.* ***(EL 5, RG D)***

*Abstaining from milk and milk products is not a correct attitude, particularly in patients in remission, if there is no lactose intolerance. Lactose-free products or supplementation of lactase enzyme might be considered if necessary.* ***(EL 5, RG D)***

*It should be kept in mind that redundant and extreme dietary restrictions will lead to malnutrition, weight loss, immune deficiency, and an increased rate of disease complications.* ***(EL 5, RG D)***

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