

# Clinical Improvement in Patients with Irritable Bowel Syndrome and Low Level of DAO after Supplementation with Bovine Colostrum and Vitamins: A Case Series

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## Abstract

**Background:** Irritable Bowel Syndrome (IBS) is a functional gastrointestinal disorder often associated with altered Diamine Oxidase (DAO) activity and histamine intolerance. The aim of this study was to evaluate the effect of bovine colostrum and vitamins, on DAO levels and clinical symptoms in patients with IBS. **Methods:** Four patients (two IBS-C, one IBS-D and one IBS-M) were evaluated for DAO activity and clinical symptoms before and after 90 days from treatment supplementation with bovine colostrum and vitamins and specific anti-inflammatory diet. Clinical improvements, weight variation, and gastrointestinal symptoms were recorded. **Results:** All patients showed significant improvement in DAO levels and reduction of IBS-related symptoms. Patients also reported improved energy levels and tolerance to previously problematic foods. **Conclusion:** Supplementation with bovine colostrum and vitamins and specific anti-inflammatory diet was associated with increased DAO activity and marked clinical improvement in patients with IBS. Further studies on larger populations are warranted.

## Keywords

Irritable Bowel Syndrome, DAO, Histamine Intolerance, Vitamins, IMopro Colostrum Plus®

## 1. Introduction

Irritable Bowel Syndrome (IBS) is an extremely common functional gastrointestinal disorder [1] affecting a significant portion of the global population and char-

acterized by chronic symptoms such as abdominal pain, bloating, and bowel changes (diarrhea, constipation, or a combination of both). Despite its prevalence, the pathophysiology of IBS remains complex and incompletely understood. Recent studies have suggested that impaired degradation of dietary histamine may play a key role in the etiology of IBS symptoms. Specifically, approximately two-thirds of IBS patients have a deficiency or reduced activity of the enzyme Diamine Oxidase (DAO), the primary catalyst responsible for the metabolism of dietary histamine [2]. A DAO deficiency leads to an accumulation of histamine in the body, which can trigger or worsen gastrointestinal and systemic symptoms that are often mistaken for allergic reactions. Bovine colostrum [3], known to be rich in bioactive peptides and immunomodulatory factors, has been proposed as a potential nutritional intervention to improve intestinal mucosal integrity. It is hypothesized that improving the intestinal barrier may, in turn, promote increased activity of the DAO enzyme, which is produced primarily in intestinal cells. It is possible to combine a diet to support the DAO enzyme [4] with the aim of supporting its activity through the consumption of anti-inflammatory foods, low in histamine and rich in vitamins and minerals. Our daily clinical experience has highlighted that an anti-inflammatory diet alone [5] is not sufficient to raise DAO levels.

The objective of this study was to report the clinical outcomes and DAO variations in four IBS patients supplemented with a bovine colostrum-based and vitamins nutraceutical with an anti-inflammatory diet. IMOpro Colostrum Plus consisting of 300 mg of bovine colostrum, 80 mg of Vitamin C, 12 mg of Vitamin E, 800 micrograms of Vitamin A and 5 micrograms of Vitamin D3.

## 2. Observation

This observational case series included four adult patients diagnosed with different IBS subtypes (IBS-D, IBS-C, and IBS-M). The Rome IV criteria was used to diagnose IBS. The Rome IV criteria define Irritable Bowel Syndrome (IBS) as recurrent abdominal pain, on average at least one day per week in the last three months, associated with two or more of the following: 1) relation to defecation, 2) associated with a change in stool frequency, and 3) associated with a change in stool form. Symptoms must have been present for at least three months, with an onset at least six months before diagnosis. The subtypes of Irritable Bowel Syndrome (IBS), IBS-C (constipation), IBS-D (diarrhea), and IBS-M (mixed) are diagnosed based on a patient's predominant stool pattern and symptoms, using criteria like the Rome IV criteria which require recurrent abdominal pain associated with a change in bowel habits. This diagnosis is based on symptoms, not physical tests, and requires that other conditions be ruled out. All patients were evaluated for DAO activity (U/mL) and clinical symptoms before (T0) and after (T1) 90 days of supplementation with IMOpro Colostrum Plus and anti-inflammatory diet. This diet generally, it is recommended to consume fatty fish rich in omega-3, nuts, seeds, and a wide variety of fresh fruits and vegetables, limiting foods such as aged cheeses, preserved fish, alcohol, chocolate and processed foods. The nutraceutical was ad-

ministered orally 1 stick starting for 90 consecutive days from the date indicated for each patient, with regular follow-up visits assessing symptom changes, weight, and general well-being. No concomitant medications were reported.

**Table 1.** Differences between DAO and WEIGHT before (T0) and after (T1) taking the Supplement.

PATIENT	IBS-TYPE	DAO T0	DAO T1	Δ DAO	WEIGHT T0	WEIGHT T1	Δ WEIGHT
1	IBS-D	2.5	14.4	+11.9	83.0	75.7	-7.3
2	IBS-C	1.1	8.6	+7.5	88.2	81.2	-7.0
3	IBS-C	5.0	14.7	+9.7	61.0	59.5	-1.5
4	IBS-M	1.1	24.7	+23.6	77.0	69.1	-7.9

Differences between DAO at T0 and DAO at T1 (after 90 days of treatment) and Difference between Weight at T0 and T1 (after 90 days of treatment).

**\*\*Subject 1\*\***

The patient was a woman, 63 years old, widow with two children. Height 1.74 m, weight 83 kg at baseline. Presented with frequent diarrheal discharges (IBS-D). Diagnosis of irritable bowel syndrome (IBS) with the Rome IV criteria. No concurrent diseases or therapies. Baseline DAO: 2.5 U/mL (06.02.2025). Started IMOpro Colostrum Plus and anti-inflammatory diet on 06.03.2025. After three weeks reported absence of diarrhea, improved energy, and well-being. Follow-up DAO (08.06.2025): 14.4 U/mL. Final weight: 75.7 kg (-7.3 kg).

**\*\* Subject 2\*\***

The patient was a man, 43 years old, married with one child. Height 1.81 m, weight 88.2 kg. Diagnosed with IBS-C, recurrent prostatitis, and nickel intolerance. Diagnosis of irritable bowel syndrome (IBS) with the Rome IV criteria. No other therapies. Baseline DAO: 1.1 U/mL (12.01.2025). Started IMOpro Colostrum Plus and anti-inflammatory diet on 27.02.2025. Follow-up DAO (08.05.2025): 8.6 U/mL. Weight reduced to 81.2 kg. Remarkably, no prostatitis episodes occurred over seven months of follow-up.

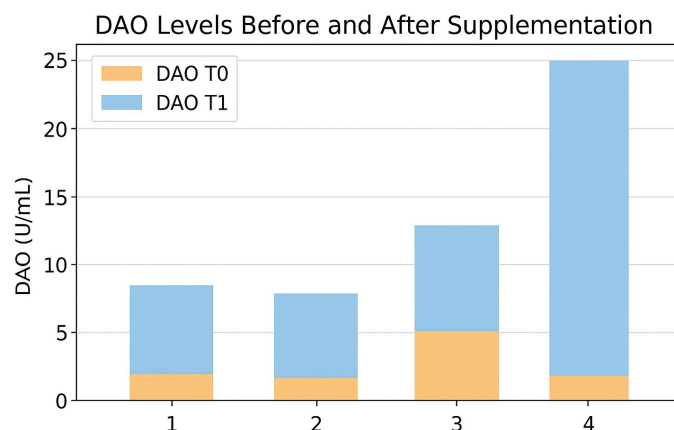
**\*\* Subject 3\*\***

The patient was a woman, 64 years old, married with two children. Height 1.58 m, weight 61 kg. Diagnosed with IBS-C, histamine and lactose intolerance, and recurrent cystitis. Diagnosis of irritable bowel syndrome (IBS) with the Rome IV criteria. Baseline DAO: 5.0 U/mL (24.02.2025). Started IMOpro Colostrum Plus and anti-inflammatory diet on 27.03.2025. Reported reduced bloating, improved tolerance to histamine-containing foods. Follow-up DAO (28.06.2025): 14.7 U/mL. Final weight: 59.5 kg.

**\*\* Subject 4\*\***

The patient was a woman, 43 years old, married with three children. Height 1.67 m, weight 77 kg. Diagnosed with IBS-M, histamine and nickel allergy. Diagnosis of irritable bowel syndrome (IBS) with the Rome IV criteria. No other conditions or therapies. Baseline DAO: 1.1 U/mL (26.02.2025). Started IMOpro Colos-

trum Plus and anti-inflammatory diet on 21.03.2025. Follow-up DAO (26.06.2025): 24.7 U/mL. Reported being symptom-free, able to tolerate foods previously triggering symptoms, and maintained good health even during honeymoon. Final weight: 69.1 kg.



**Figure 1.** Variation of DAO.

### 3. Discussion

Studies on bovine colostrum's effects on diamine oxidase (DAO) activity are limited [6], but it is known to modulate immune responses and intestinal permeability, which are influenced by DAO. Some research suggests bovine colostrum components may suppress inflammatory cytokines like IL-6 [7], which is related to DAO pathways, and could potentially offer benefits by lowering systemic lipopolysaccharide (LPS) levels in certain infections, although direct DAO modulation isn't the focus. Studies show vitamin C can modulate or influence diamine oxidase (DAO) by supporting its function, and also acts as a histamine antagonist, potentially stabilizing mast cells. While not a direct modulator, its role as a cofactor and its antihistamine properties are crucial for the body's histamine-degrading system, which includes the DAO enzyme. Research indicates vitamin C supplementation [8] can increase DAO activity and is often recommended alongside DAO enzyme products to improve histamine intolerance symptoms. Studies on bovine colostrum [9], including IMOpro Colostrum Plus, indicate it can modulate zonulin, a key regulator of intestinal permeability. In a case series, patients with IBS-D and high zonulin levels experienced a significant reduction in zonulin after taking IMOpro COLOSTRUM Plus® with vitamins for 30 days. Another study showed that oral supplementation with bovine colostrum significantly decreased intestinal permeability in athletes, which was associated with a decrease in stool zonulin concentration. [9] All four patients demonstrated significant increases in DAO (**Table 1**) levels and clinical remission of IBS-related symptoms after supplementation with IMOpro Colostrum Plus. The observed improvements suggest that bovine colostrum may play a role in enhancing intestinal barrier integrity, modulating inflammation, and supporting DAO enzyme function (**Figure 1**). The notable reduction

in extraintestinal symptoms such as fatigue and prostatitis further supports its systemic benefits. Limitations of this study include the small sample size and absence of a control group, but the consistent trend across cases warrants larger controlled trials.

#### 4. Conclusion

Supplementation with IMOpro Colostrum Plus was associated with an improvement in DAO activity and an increase in its baseline value as well as an improvement in symptoms and signs in patients with IBS. It is rich in vitamin C, a micro-nutrient that acts directly as an essential cofactor for the DAO enzyme, supporting its ability to degrade histamine. Vitamins A and E are essential for maintaining intestinal mucosa and antioxidant protection. These results highlight the potential of bovine colostrum as a supportive nutraceutical therapy for IBS and histamine intolerance. Future randomized controlled trials (RCTs) with larger patient cohorts are needed to robustly confirm these promising preliminary results.

#### Provenance and Peer Review

All authors have read and approved the document.

#### Consent

Patients gave consent to report cases.

#### Conflicts of Interest

di Geso and Iannicelli declare no conflicts of interest regarding the publication of this paper. Luigi Alberto Marrari is the medical director of IMO SpA.

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