

# Ulcerative Colitis: Clinical and Endoscopic Characteristics and Therapeutic Management in the Colombian Caribbean Region

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### Citation:

Meza-Santiago BP, Montoya-Jaramillo ME, Fábregas-Ramírez JJ. Ulcerative Colitis: Clinical and Endoscopic Characteristics and Therapeutic Management in the Colombian Caribbean Region. *Revista. colomb. Gastroenterol.* 2026;41(1):21-28.  
<https://doi.org/10.22516/25007440.1412>

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Received: 01/07/2025  
Accepted: 23/02/2026



## Abstract

**Introduction:** Ulcerative colitis (UC) has shown a global increase in incidence in developing countries. In Colombia, its prevalence exceeds that of Crohn's disease, and adherence to clinical practice guidelines remains uncertain, making regional epidemiological characterization essential. **Objective:** To identify clinical patterns, histoendoscopic findings, and therapeutic approaches in patients with UC at a referral center in Barranquilla, Colombia, in 2024. **Methods:** A retrospective descriptive case series was conducted, including 49 adults with histologically confirmed UC treated at a referral center in the Colombian Caribbean region during 2024. Sociodemographic, clinical, endoscopic, histological, and therapeutic variables were collected and analyzed. **Results:** A total of 49 patients were evaluated (mean age: 53.9 years), with a predominance of females and urban residents. Low consumption of alcohol, nonsteroidal anti-inflammatory drugs, and oral contraceptives was observed. The absence of prior appendectomy and the presence of conditions such as anxiety and depression were notable findings. Inflammatory activity assessed by acute-phase reactants and rectal bleeding were frequent. Anatomical extension predominantly corresponded to left-sided colitis and pancolitis, and endoscopic severity was mainly classified as Mayo score 2. Monotherapy with 5-ASA was the most commonly used regimen, with a transition toward combination therapy as endoscopic severity increased and more specific therapeutic regimens were required. **Conclusions:** The findings highlight heterogeneity in the management of UC and a discordance between clinical and endoscopic severity classifications. Integrating demographic, clinical, and histoendoscopic data is essential to optimize treatment strategies and clinical outcomes within the Colombian healthcare context.

## Keywords

Ulcerative colitis, inflammatory bowel disease, colitis.

## INTRODUCTION

Ulcerative colitis (UC) is one of the two principal manifestations of inflammatory bowel disease (IBD). It is a chronic immune-mediated condition characterized by persistent inflammation of the colonic mucosa. This inflammation is typically superficial and continuous, generally beginning in the rectum and extending proximally in a progressive manner<sup>(1)</sup>. Although IBD was initially considered a disorder predominantly affecting Western populations, recent studies describe a dynamic

pattern consistent with a four-stage epidemiological transition model (emergence, acceleration, compounding prevalence, and prevalence equilibrium). Over the past two decades, a marked increase in incidence has been observed in recently industrialized countries, particularly in regions of the Middle East, Asia, and South America. In contrast, incidence rates of IBD in Western countries appear to have entered a stabilization phase at the transition into the twenty-first century, which may reflect saturation of previously prevalent risk factors or the impact of early preventive strategies<sup>(2)</sup>.

Globally, approximately 4.9 million individuals were living with IBD in 2019, and although age-adjusted prevalence experienced a slight decline between 1990 and 2019, the absolute number of affected individuals has increased. UC specifically affects between 156 and 291 individuals per 100,000 inhabitants annually and is more commonly observed among adults in Western countries. Crohn's disease (CD), by contrast, has an estimated prevalence of 320 per 100,000 inhabitants in these same regions and occurs less frequently in other parts of the world<sup>(3)</sup>. In the Colombian context, IBD demonstrates a distinctive epidemiological profile in which UC shows greater prevalence compared with CD. Data corresponding to the 2012–2017 period indicate an annual prevalence of UC of 58.14 per 100,000 inhabitants, compared with 8.9 per 100,000 inhabitants annually for CD. This reflects an approximate UC-to-CD ratio of 4:1<sup>(4)</sup>.

Understanding the factors contributing to the origin and development of IBD remains an active area of research, as its etiology has not yet been fully elucidated, and several exposure-related factors have been described as potentially involved in the etiopathogenesis of the disease, including smoking, alcohol use, nonsteroidal anti-inflammatory drug (NSAID) use, oral contraceptives, prior surgical interventions, and psychiatric disorders. However, the most widely accepted hypothesis involves an exaggerated and persistent mucosal immune response directed toward components of the intestinal microbiota in genetically susceptible individuals. This chronic inflammatory response leads to destruction of the colonic epithelium, ulcer formation, and the development of characteristic clinical manifestations of the disease<sup>(5,6)</sup>.

Within the complex landscape of UC diagnosis and management, clinical decision-making continues to represent a significant challenge. Although multiple clinical practice guidelines and evidence-based consensus recommendations have been developed by scientific societies at both international and national levels, including in Colombia<sup>(7–10)</sup>, translation of these recommendations into routine clinical practice is not always implemented consistently. This gap between evidence and clinical practice underscores the need for studies conducted within the Colombian context to evaluate adherence to these recommendations. Such studies would facilitate objective assessment of the clinical implementation of national and international guidelines for comprehensive UC management and help identify potential areas for optimization in patient care. Validation of the applicability of these guidelines within the local population is essential, as characteristics of the health system, resource availability, and specific patient factors may influence both implementation and effectiveness.

## MATERIALS AND METHODS

A retrospective descriptive case series was conducted in accordance with the ethical principles of the Declaration of Helsinki. Patients older than 18 years with histologically confirmed UC who attended outpatient gastroenterology consultation at a referral center in Barranquilla, Colombia, between January and December 2024 were included. To minimize selection bias, inclusion criteria were defined as patients older than 18 years, of Colombian nationality, with biopsy-confirmed UC diagnosis obtained through endoscopic evaluation, presence of active gastrointestinal symptoms (chronic diarrhea, rectal tenesmus, food intolerance), and available fecal calprotectin measurement at the time of evaluation. Patients with gastrointestinal cancer, unclassified IBD, nonspecific ileitis, infectious colitis, or UC with concomitant IBD were excluded. Pregnant or breastfeeding women were also excluded.

A non-probabilistic convenience sampling strategy was employed. Methodologically, a list of 49 patients was identified, including type and number of identification document, who were evaluated in outpatient consultation by three different gastroenterologists at a single hospital center. Additionally, a data collection team was established consisting of a third-year internal medicine resident and a specialist in gastroenterology. Data were obtained from a primary source of information (medical records), following prior notification and approval by the institutional research ethics committee, using the ICD-10 diagnostic coding system for codes K51.9 (ulcerative colitis, unspecified) and K52.8 (other specified noninfective colitis and gastroenteritis). A structured data collection instrument designed in Excel<sup>®</sup> was used to allow systematic data entry and tabulation. To minimize information bias, a standardized data collection protocol was developed in which each variable included in the study was precisely and explicitly defined. The data collection team received repeated training regarding the data collection protocol, operational definitions of variables, and appropriate use of the Excel<sup>®</sup> instrument. Calibration exercises were also conducted, in which both data collectors independently extracted data from the same medical records and subsequently compared results to identify and resolve discrepancies.

The variables included were as follows: sociodemographic variables (SD): age, age at diagnosis, and sex; exposure-related variables (EX): geographic origin, alcohol use, oral contraceptive use, smoking status, smoking cessation, appendectomy, anxiety, and depression; clinical variables (C): abdominal pain, proctalgia, temperature >38°C, heart rate >80 beats per minute (bpm), blood in stool, fecal incontinence, number of bowel movements per day, hemoglobin, leukocyte count, C-reactive protein (CRP) level, erythro-

cyte sedimentation rate (ESR), Truelove and Witts severity index, American College of Gastroenterology (ACG) severity index, and fecal calprotectin; endoscopic variables (EN): anatomical location and Mayo endoscopic score; histological variable (H): pathology findings; therapeutic variables (T): initial therapeutic regimen and type of treatment.

Collected data were processed using Jamovi Version 2.4.5 (Sydney, Australia) for statistical analysis. Qualitative variables were summarized using frequencies and percentages, whereas quantitative variables were described using measures of central tendency and dispersion (median and interquartile ranges). No hypothesis testing or inferential analyses were conducted due to the case series design. The manuscript was structured following principles of transparency and quality in the reporting of descriptive observational studies. Given the case series design, no analytical comparisons or control for confounding variables were performed.

Regarding participant risk, according to the criteria established in Article 11 of Resolution 8430 of 1993 issued by the Colombian Ministry of Health, this research was classified as minimal risk, as it involved the collection of data recorded in medical records<sup>(11)</sup>.

## RESULTS

During the study period, from January 2024 to December 2024, 49 patients with histologically confirmed UC were identified. The mean age of the study population was  $53.9 \pm 16.6$  years, with a mean age at diagnosis of  $48.3 \pm 16.3$  years. Regarding sex distribution, 57.1% of patients were female and 42.9% were male. A substantial majority (95.9%) resided in urban areas, compared with 4.1% from rural regions (**Table 1**).

Alcohol consumption was absent in the majority of the population (77.6%), whereas 22.4% reported alcohol use. NSAID use was reported in 30.6% of patients, while 69.4% reported no use. Among female participants, 67.8% did not report oral contraceptive use, whereas 32.2% reported current or prior use. Notably, 37.5% of patients reported being smokers, while 62.5% were non-smokers; smoking cessation was achieved in 34% of individuals, whereas 66% continued smoking. Regarding prior surgical procedures and mental health conditions, 87.8% of participants reported no history of appendectomy, while 12.2% had undergone this procedure. In the evaluation of mental health conditions, anxiety was present in 12.2% of patients and depression in 4.1% (**Table 1**).

With respect to the clinical profile, laboratory chemistry and hematologic parameters showed a mean erythrocyte sedimentation rate (ESR) of  $22.8 \pm 11.0$  mm/h and a median C-reactive protein (CRP) level of 0.360 mg/L, both relevant markers in the context of systemic inflammation.

**Table 1.** Demographic and exposure-related characteristics (n = 49)

Variable	n (%) / Median $\pm$ SD
<b>Sociodemographic variables</b>	
Age (years), median (IQR)	53.9 $\pm$ 16.6
Age at diagnosis (years), median (IQR)	48.3 $\pm$ 16.3
Sex	
- Male	21 (42.9)
- Female	28 (57.1)
<b>Exposure-related variables</b>	
Alcohol use	
- No	38 (77.6)
- Yes	11 (22.4)
NSAID use	
- No	34 (69.4)
Oral contraceptives	
- Yes	9 (32.2)
Smoking	
- No	30 (62.5)
- Yes	18 (37.5)
Smoking cessation	
- No	31 (66)
- Yes	16 (34)
Appendectomy	
- No	43 (87.8)
- Yes	6 (12.2)
Anxiety	
- No	43 (87.8)
- Yes	6 (12.2)
Depression	
- No	47 (95.9)
- Yes	2 (4.1)

SD: standard deviation; NSAID: nonsteroidal anti-inflammatory drug; IQR: interquartile range. Table prepared by the authors.

Median hemoglobin level was 13.0 g/dL, and median leukocyte count was  $11.7 \times 10^3/\mu\text{L}$ . Fecal calprotectin levels, indicative of intestinal inflammatory activity, showed a median value of 589  $\mu\text{g/g}$  (interquartile range [IQR]: 88.4–1736). Based on fecal calprotectin interpretation, 67.3% of patients were classified as having active disease, 4.1% as indeterminate, and 28.6% as in remission within the overall population (**Table 2**). From a symptomatic perspective, abdominal pain was the most frequently reported symptom, present in 59.2% of patients. None of the participants exhibited body temperature  $>38^\circ\text{C}$  or heart rate  $>80$  beats

per minute (bpm). However, the presence of blood in stool was reported in 71.4% of patients, compared with 28.6% without this finding. Fecal incontinence was reported in 20.4% of the total population. The number of daily bowel movements was distributed across three clinical categories: 1–4 bowel movements per day in 59.2% of patients, 5–10 in 30.6%, and >10 in 10.2%, demonstrating variability in symptomatic presentation (**Table 2**).

**Table 2.** Clinical characteristics (n = 49)

Variable	n (%) / Median (IQR)
<b>Hematologic parameters</b>	
ESR (mm/h), median (IQR)	22,8 ± 11,0
Hemoglobin (g/dL), median (IQR)	13 (11,5-14,1)
Leukocytes (10 <sup>9</sup> /L), median (IQR)	11,7 (7,23-16,05)
CRP (mg/L), median (IQR)	0,360 (0,140-1,15)
<b>Stool sample</b>	
Fecal calprotectin (µg/g), median (IQR)	589 (88,4-1736)
<b>Fecal calprotectin interpretation according to ACG, n (%)</b>	
Activity (>200 µg/g)	33 (67,3)
Indeterminate (110-200 µg/g)	2 (4,1)
Remission (≤100 µg/g)	14 (28,6)
<b>Symptoms*</b>	
Abdominal pain	
- No	20 (40,8)
- Sí	29 (59,2)
Proctalgia	
- No	38 (77,6)
- Yes	11 (22,4)
Body temperature >38 °C	
- No	49 (100)
Heart rate >80 bpm	
- No	49 (100)
Blood in stool	
- No	14 (28,6)
- Yes	35 (71,4)
Fecal incontinence	
- Absent	39 (79,6)
- Present	10 (20,4)
Number of bowel movements per day	
- 1–4 bowel movements	29 (59,2)
- 5–10 bowel movements	15 (30,6)
- >10 bowel movements	5 (10,2)

\*Some patients presented more than one symptom. ACG: American College of Gastroenterology; bpm: beats per minute; CRP: C-reactive protein; ESR: erythrocyte sedimentation rate.

With respect to endoscopic and histopathological evaluation, notable heterogeneity was observed in inflammatory patterns within the study population. The anatomical extent of disease showed the following distribution: proctitis was identified in 16.3% of patients, left-sided colitis in 42.9%, and pancolitis in 40.8% of the total population. In contrast, right-sided colitis demonstrated low frequency, documented in only 8.2% of cases. Regarding the Mayo endoscopic score, the distribution showed predominance of Mayo 2, observed in 46.9% of patients, followed by Mayo 1 in 26.5% and Mayo 3 in 26.5%. From a histopathological perspective, biopsy analysis revealed chronic colitis as the predominant finding, documented in 59.2% of individuals. This pattern was followed by severe acute colitis, present in 28.6%, and chronic colitis with acute exacerbation, identified in 12.2% (**Table 3**). Among patients classified as having mild disease severity according to the ACG index, 18.2% were categorized as severe according to the Truelove and Witts index, 27.6% as moderate, and 44.4% as mild. This group predominated in the overall population (69.4%), highlighting discordance in clinical classification prior to endoscopic evaluation. Within the group classified as moderate according to ACG criteria, only one case (2%) was classified as mild according to Truelove and Witts, without significant concordance across other categories (**Table 4**).

**Table 3.** Endoscopic and histological characteristics (n = 49)

Variable	n (%)
<b>Endoscopic anatomical variables</b>	
Anatomical endoscopic location	
- Proctitis	8 (16.3)
- Left-sided colitis	21 (42.9)
- Pancolitis	20 (40.8)
- Predominant right-sided involvement*	4 (8.2)
Mayo endoscopic score, n (%)	
- Mayo 1 (mild erythema, decreased vascular pattern)	13 (26.5)
- Mayo 2 (marked erythema, absent vascular pattern, erosions)	23 (46.9)
- Mayo 3 (spontaneous bleeding, extensive ulcerations, exudate)	13 (26.5)
<b>Histopathological variables</b>	
Pathology report, n (%)	
- Chronic colitis with mild to moderate activity	29 (59.2)
- Chronic colitis with severe activity	14 (28.6)
- Chronic changes without significant inflammatory activity	6 (12.2)

\*Predominant right-sided involvement corresponds to patients with disease extension beyond the left colon within the spectrum of extensive colitis. Table prepared by the authors.

**Table 4.** Clinical severity characteristics

Clinical variables ACG severity index, n (%)	Truelove and Witts severity index, n = 49			
	Severe	Moderate	Mild	Total
Acute severe	9 (81.8%)	16 (55.2%)	5 (55.6%)	3 (6.1%)
Moderate	0 (0%)	5 (17.2%)	0 (0%)	1(2%)
Mild	2 (18.2%)	8 (27.6%)	4 (44.4%)	34 (69.4%)

Table prepared by the authors.

Finally, regarding the initial therapeutic regimen, monotherapy with 5-aminosalicylate (5-ASA) emerged as the predominant treatment strategy, applied in 69.4% of cases. Alternative therapeutic approaches included pharmacological combinations of two or three active agents. Notable combinations included 5-ASA + corticosteroid in

6.1%, 5-ASA + immunomodulator in 2%, and 5-ASA + corticosteroid + immunomodulator in 6.1%. Anti-TNF therapy was used in 4.1% of patients, while anti-TNF + 5-ASA + corticosteroid was used in 4.1%, anti-TNF + 5-ASA in 6.1%, and anti-TNF + 5-ASA + immunomodulator in 2%. Each of these pharmacological combinations represents the range of treatment strategies implemented in the observed clinical practice (**Table 5**). With respect to endoscopic severity, classified according to the Mayo score, notable heterogeneity was observed in the initial pharmacological strategies. Monotherapy with 5-ASA was consolidated as the predominant regimen, being used in 73.5% of the study population. Its prevalence was most pronounced in Mayo 1, where it represented 84.6% of cases, followed by Mayo 2, in which it reached 87.0%, and, similarly, in Mayo 3, also accounting for 87.0% (**Table 5**). In contrast, polytherapy, characterized by the combined use of two or three medications, showed limited implementation overall, being

**Table 5.** Therapeutic regimen characteristics (n = 49)

Therapeutic variables Type of treatment, n (%)				
Treatment	n (%)			
5-ASA	34 (69.4)			
5-ASA + oral corticosteroid	3 (6.1)			
5-ASA + immunosuppressant	1 (2)			
5-ASA + oral corticosteroid + immunosuppressant	3 (6.1)			
Anti-TNF	2 (4.1)			
Anti-TNF + 5-ASA	3 (6.1)			
Anti-TNF + 5-ASA + oral corticosteroid	2 (4.1)			
Anti-TNF + 5-ASA + immunosuppressant	1 (2)			
Initial therapeutic regimen, n (%) (distribution according to Mayo endoscopic score)				
Regimen	Mayo 1	Mayo 2	Mayo 3	Total
Monotherapy*	11 (84.6)	20 (87)	20 (87)	36 (73.5)
5-ASA	10 (76.9)	20 (87)	20 (87)	
Anti-TNF	1 (7.7)	0 (0)	0 (0)	
Polytherapy*	2 (15.4)	3 (13)	3 (13)	13 (26.5)
5-ASA + oral corticosteroid	0 (0)	1 (4.3)	1 (4.3)	
5-ASA + immunosuppressant	1 (7.7)	0 (0)	0 (0)	
5-ASA + oral corticosteroid + immunosuppressant	0 (0)	2 (8.7)	2 (8.7)	
Anti-TNF + 5-ASA	1 (7.7)	0 (0)	0 (0)	
Anti-TNF + 5-ASA + oral corticosteroid	0 (0)	0 (0)	0 (0)	
Anti-TNF + 5-ASA + immunosuppressant	0 (0)	0 (0)	0 (0)	

\*Monotherapy defined as therapy with a single medication; polytherapy defined as therapy using combined pharmacological agents. 5-ASA: aminosalicylates; anti-TNF: tumor necrosis factor-alpha inhibitors. Table prepared by the authors.

documented in 26.5% of cases. Its frequency was lower in Mayo 1, encompassing 15.4% of patients, while in Mayo 2 it decreased to 13.0%. Conversely, it showed a notable increase in Mayo 3, reaching 61.5% of cases. This finding reflects differences in therapeutic strategies (**Table 5**).

The observed differences in the proportion of polytherapy versus monotherapy across Mayo categories may reflect heterogeneity in clinical management protocols. Likewise, the selection of specific treatment regimens varied meaningfully according to endoscopic severity. This reinforces the variability in therapeutic strategies employed within this clinical population (**Table 5**).

## DISCUSSION

The findings of this study provide relevant evidence regarding the clinical, demographic, and therapeutic characteristics of patients with UC. These data challenge established paradigms and highlight the heterogeneity of this form of IBD. The predominance of female patients, representing 57.1% of the study population, and a mean age at diagnosis of 48.3 years are consistent with data reported in the National Registry of Inflammatory Bowel Disease in Colombia<sup>(12)</sup>, which describes similar proportions in local cohorts. However, the mean age at presentation was  $53.9 \pm 16.6$  years, exceeding the typical range of 20–40 years described in international literature. This finding suggests potential diagnostic delay or population-specific influences that warrant further investigation. The high proportion of urban patients (95.9%) compared with rural patients (4.1%) underscores the impact of environmental factors associated with urbanization, such as diet and stress. These factors are consistent with studies linking these elements to increased risk of IBD, a trend also documented in international research<sup>(13)</sup>.

Regarding exposure-related factors, the relatively low prevalence of alcohol consumption (22.4%) and limited NSAID use (30.6%) contrast with international studies demonstrating a greater impact of these variables in other populations<sup>(14)</sup>. Smoking prevalence reached 37.5%, and 66% of patients continued smoking despite attempts at cessation. These findings reinforce the pro-inflammatory impact of tobacco use, widely documented as an aggravating factor in UC<sup>(15)</sup>. Further investigation would be valuable to clarify the underlying mechanisms in this population. Similarly, the presence of anxiety (12.2%) and depression (4.1%) is consistent with reports highlighting the psychosocial burden associated with IBD. This affects quality of life and therapeutic management and suggests the importance of incorporating mental health assessment into the clinical management of UC<sup>(16)</sup>.

The clinical profile showed elevations in inflammatory biomarkers, including increased fecal calprotectin levels (as defined by the ACG in relation to disease activity: fecal calprotectin levels  $>250 \mu\text{g/g}$  are reliable predictors of endoscopic inflammatory activity, whereas values  $<150 \mu\text{g/g}$  suggest deep remission). The median value was  $589 \mu\text{g/g}$ . Systemic markers, including ESR and CRP, were also elevated, confirming their central role in monitoring disease activity. These results are consistent with international clinical standards that position these biomarkers as reliable predictors of inflammatory activity<sup>(17)</sup>. Heterogeneity in endoscopic inflammatory patterns and anatomical disease extent revealed a relevant distribution, with pancolitis predominating in 40.8% of cases. Additionally, Mayo scores indicated substantial disease severity, with Mayo 2 being the most frequent category (46.9%). This finding supports the need for differentiated clinical management according to inflammatory activity and disease extent<sup>(18)</sup>. Histopathologically, chronic colitis (59.2%) reflected the persistent nature of UC, with acute colitis (28.6%) and chronic colitis with acute exacerbation (12.2%) representing additional patterns. The discordance between ACG and Truelove and Witts severity indices emphasizes the importance of endoscopic evaluation, consistent with current recommendations.

From a therapeutic perspective, monotherapy with 5-ASA predominated across all levels of disease severity and was selected as the initial treatment regimen in 69.4% of patients. This consolidates its role as the standard first-line therapeutic strategy<sup>(8)</sup>. However, in cases of greater endoscopic severity, such as Mayo 3, the use of polytherapy increased and reached 61.5%. These differences in therapeutic approaches reflect the need to tailor clinical management protocols to patient-specific characteristics, in accordance with UC management guidelines<sup>(19)</sup>, and highlight the trend toward therapeutic escalation according to disease activity. The observed discrepancy between clinical severity indices (ACG and Truelove and Witts) and endoscopic findings demonstrates variability in patient classification prior to endoscopic evaluation. This finding underscores the need for more robust stratification tools to improve clinical classification accuracy, which may optimize management strategies and improve clinical outcomes.

Although the present study provides valuable insights into the local characterization of UC, several limitations inherent to its design must be acknowledged. The sample size of 49 patients limits generalizability of findings to the heterogeneous Colombian population. The descriptive case series design restricts the ability to establish causal associations or conduct inferential comparisons. Likewise, the single-center nature of the study limits extrapolation of

findings to other regions of the country. Therefore, future multicenter and longitudinal studies with larger sample sizes are recommended to explore the temporal dynamics of the disease and therapeutic response. These studies may expand understanding of UC in Colombia.

These methodological considerations highlight important knowledge gaps. The discordance between initial clinical assessment and endoscopic findings underscores the need for more precise pre-endoscopic severity stratification

tools. The heterogeneity observed in initial therapeutic regimens, even among patients with similar endoscopic severity, raises questions regarding adherence to clinical guidelines and the potential need for individualized treatment approaches. Finally, the associations identified with factors such as urban origin and psychiatric comorbidities warrant future research to explore underlying mechanisms and the influence of specific genetic and environmental factors in the Colombian population with UC.

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