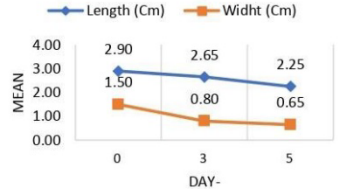
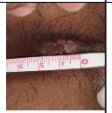
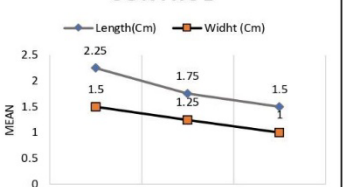
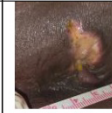
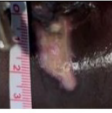


Table S1. Progress of wound healing in cases of perianal fistula based on visual analog scale (VAS), granulation, and re-epithelization. H0, H3, and H5 indicate observations on day 0, day 3, and day 5, respectively

No.	Progress of Wound Healing			VAS	Granulation	Re-epithelization	Progress Chart of Wound Size												
	Day-0	Day-3	Day-5																
Therapy Group																			
1				H0 : 6-7 ; H5 : 1-2	H3 : + ; H5 : -	H3 : + ; H5 : +	THERAPY Length (Cm) Width (Cm) <table><thead><tr><th>DAY-</th><th>Length (Cm)</th><th>Width (Cm)</th></tr></thead><tbody><tr><td>0</td><td>2.90</td><td>1.50</td></tr><tr><td>3</td><td>2.65</td><td>0.80</td></tr><tr><td>5</td><td>2.25</td><td>0.65</td></tr></tbody></table>	DAY-	Length (Cm)	Width (Cm)	0	2.90	1.50	3	2.65	0.80	5	2.25	0.65
DAY-	Length (Cm)	Width (Cm)																	
0	2.90	1.50																	
3	2.65	0.80																	
5	2.25	0.65																	
2				H0 : 5-6 ; H5 : 1-2	H3 : + ; H5 : -	H3 : + ; H5 : +													
Control Group																			
1				H0 : 6-7 ; H5 : 6-7	H3 : + ; H5 : -	H3 : + ; H5 : +	CONTROL Length(Cm) Width (Cm) <table><thead><tr><th>DAY-</th><th>Length(Cm)</th><th>Width (Cm)</th></tr></thead><tbody><tr><td>0</td><td>2.25</td><td>1.5</td></tr><tr><td>3</td><td>1.75</td><td>1.25</td></tr><tr><td>5</td><td>1.5</td><td>1.0</td></tr></tbody></table>	DAY-	Length(Cm)	Width (Cm)	0	2.25	1.5	3	1.75	1.25	5	1.5	1.0
DAY-	Length(Cm)	Width (Cm)																	
0	2.25	1.5																	
3	1.75	1.25																	
5	1.5	1.0																	
2				H0 : 6-7 ; H5 : 5-6	H3 : + ; H5 : -	H3 : + ; H5 : +													

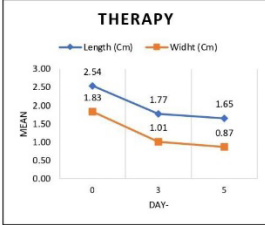
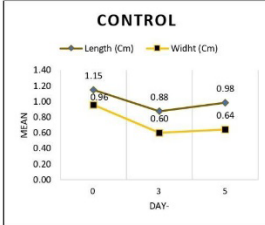
“+” indicates presence, and “-” indicates absence of observed parameters.

Table S2. Progress of wound healing based on Visual Analog Scale (VAS), granulation, and re-epithelization in therapy and control groups. H0, H3, and H5 indicate observations on Day 0, Day 3, and Day 5, respectively

No.	Progress of wound healing			VAS	Granulation	Re-epithelization	Progress chart of wound												
	Day-0	Day-3	Day-5																
Therapy group																			
1				H0 : 5-6 ; H5 : 1-2	H3 : + ; H5 : -	H3 : + ; H5 : +	THERAPY <table><tr><th>DAY</th><th>Length (Cm)</th><th>Width (Cm)</th></tr><tr><td>0</td><td>2.53</td><td>1.45</td></tr><tr><td>3</td><td>2.01</td><td>1.22</td></tr><tr><td>5</td><td>1.52</td><td>1.10</td></tr></table>	DAY	Length (Cm)	Width (Cm)	0	2.53	1.45	3	2.01	1.22	5	1.52	1.10
DAY	Length (Cm)	Width (Cm)																	
0	2.53	1.45																	
3	2.01	1.22																	
5	1.52	1.10																	
2				H0 : 5-6 ; H5 : 1-2	H3 : + ; H5 : -	H3 : + ; H5 : +													
3				H0 : 6-7 ; H5 : 1-2	H3 : + ; H5 : -	H3 : - ; H5 : +													
4				H0 : 6-7 ; H5 : 1-2	H3 : + ; H5 : -	H3 : - ; H5 : +													
6				H0 : 4-5 ; H5 : 1-2	H3 : + ; H5 : -	H3 : + ; H5 : +													
Control group																			
1				H0 : 7-8 ; H5 : 6-7	H3 : + ; H5 : -	H3 : + ; H5 : +	CONTROL <table><tr><th>DAY</th><th>Length (Cm)</th><th>Width (Cm)</th></tr><tr><td>0</td><td>3.58</td><td>1.83</td></tr><tr><td>3</td><td>3.17</td><td>1.70</td></tr><tr><td>5</td><td>2.17</td><td>1.55</td></tr></table>	DAY	Length (Cm)	Width (Cm)	0	3.58	1.83	3	3.17	1.70	5	2.17	1.55
DAY	Length (Cm)	Width (Cm)																	
0	3.58	1.83																	
3	3.17	1.70																	
5	2.17	1.55																	
2				H0 : 6-7 ; H5 : 6-7	H3 : + ; H5 : +	H3 : + ; H5 : +													
3				H0 : 6-7 ; H5 : 5-6	H3 : + ; H5 : +	H3 : - ; H5 : +													
4				H0 : 6-7 ; H5 : 5-6	H3 : + ; H5 : -	H3 : + ; H5 : +													
5				H0 : 6-7 ; H5 : 6-7	H3 : + ; H5 : -	H3 : + ; H5 : +													

“+” indicates presence, and “-” indicates absence of observed parameters.

Table S3. Progress in wound healing in hemorrhoid cases based on Visual Analog Scale (VAS), granulation, and re-epithelization. H0, H3, and H5 indicate observations on Day 0, Day 3, and Day 5, respectively

No	Progress of Wound Healing			VAS	Granulation	Re-epithelization	Progress chart of wound
	Day-0	Day-3	Day-5	Therapy group			
1				H0 : 5-7 ; H5 : 3-4	H3 : - ; H5 : -	H3 : + ; H5 : +	Therapy 
2				H0 : 5-6 ; H5 : 1-2	H3 : - ; H5 : -	H3 : + ; H5 : +	
3				H0 : 5-6 ; H5 : 1-2	H3 : - ; H5 : -	H3 : + ; H5 : +	
4				H0 : 5-6 ; H5 : 1-2	H3 : - ; H5 : -	H3 : + ; H5 : +	
5				H0 : 5-6 ; H5 : 1-2	H3 : - ; H5 : -	H3 : + ; H5 : +	
Control group							
1				H0 : 5-6 ; H5 : 3-4	H3 : - ; H5 : -	H3 : + ; H5 : -	Control 
2				H0 : 5-7 ; H5 : 5-6	H3 : - ; H5 : +	H3 : - ; H5 : +	
3				H0 : 5-7 ; H5 : 5-6	H3 : - ; H5 : -	H3 : - ; H5 : +	
4				H0 : 5-6 ; H5 : 1-2	H3 : - ; H5 : -	H3 : + ; H5 : +	
5				H0 : 5-6 ; H5 : 1-2	H3 : - ; H5 : -	H3 : - ; H5 : +	

“+” indicates presence, and “-” indicates absence of observed parameters.

Table S4. Statistical results Friedman test wound measurement data and Statistical results of Mann-Whitney U test wound measurement data

Statistical results Friedman test wound measurement data						
Group	Day	Size	N	Mean Ranks	SD	Friedman Analysis Result Conclusion
Therapy	0	Length	11	5.48	0.939	P=0.00 There are significant differences.
		Width	11	3.80	0.869	
	3	Length	11	4.58	1.201	

Control	5	Width	11	2.15	0.826	P=0.00	There are significant differences.
		Length	11	3.70	1.354		
		Width	11	1.30	0.874		
	0	Length	11	4.83	1.5068		
		Width	11	3.80	1.2405		
	3	Length	11	4.28	1.4062		
		Width	11	2.20	1.1745		
	5	Length	11	3.80	1.2511		
Width		11	2.10	1.1528			
Statistical results of Mann-Whitney U test wound measurement data							
Size	Day	Group	N	Mean Ranks	Result	Mann-Whitney U Test Analysis Conclusion	
Length	0	Therapy	11	24.25	P=0.041	There are significant differences	
		Control	11	16.75			
	3	Therapy	11	22.68	P=0.236	There are significant differences	
		Control	11	18.33			
	5	Therapy	11	21.90	P=0.446	There are significant differences	
		Control	11	19.10			
Width	0	Therapy	11	24.63	P=0.50	There are significant differences	
		Control	11	16.38			
	3	Therapy	11	22.63	P=0.247	There are significant differences	
		Control	11	18.38			
	5	Therapy	11	21.43	P=0.615	There are significant differences	
		Control	11	19.58			

Table S5. Statistical results of the Friedman test of TNF- α cytokine parameters and Statistical results of the Mann-Whitney U test of TNF- α cytokine parameters

Statistical results of the Friedman test of TNF- α cytokine parameters							
Group	Day	N	Mean	Mean Ranks	SD	Friedman Analysis Result	Conclusion
Therapy	0	11	149.519	2.25	228.847	P =0.086	There is no significant difference.
	3	11	92.838	2.15	35.373		
	5	11	81.921	1.60	30.495		
Control	0	11	103.358	2.10	85.424	P =0.819	There is no significant difference.
	3	11	90.985	1.90	47.474		
	5	11	93.283	2.00	53.266		
Statistical results of the Mann-Whitney U test of TNF- α cytokine parameters							
Day	Group	N	Mean Ranks	Mann-Whitney U Test Analysis Result		Conclusion	
0	Therapy	11	22.03	P = 0.409		There is no significant difference.	
	Control	11	18.98				
3	Therapy	11	22.00	P = 0.417		There is no significant difference.	
	Control	11	19.00				
5	Therapy	11	18.53	P = 0.285		There is no significant difference.	
	Control	11	22.48				

Table S6. Statistical results of the Friedman test of IL-1 cytokine parameters and Statistical results of the Mann-Whitney U test of IL-1 cytokine parameters

Statistical results of the Friedman test of IL-1 cytokine parameters							
Group	Day	N	Mean	Mean Ranks	SD	Friedman Analysis Result	Conclusion
Therapy	0	11	817.519	2.55	1543.203	P =0.006	There are significant differences.
	3	11	729.005	1.90	595.466		

Control	5	11	664.213	1.55	652.663	P = 0.638	There is no significant difference.
	0	11	1039.397	2.15	944.287		
	3	11	886.992	1,85	543.624		
	5	11	904.175	2,00	606.232		
Statistical results of the Mann-Whitney U test of IL-1 cytokine parameters							
Day	Group	N	Mean	Mann-Whitney U Test Analysis			
				Result	Conclusion		
0	Therapy	11	18.63	P = 0.310	There is no significant difference.		
	Control	11	22.38				
3	Therapy	11	16.95	P = 0.055	There are significant differences.		
	Control	11	24.05				
5	Therapy	11	16.85	P = 0.048	There are significant differences.		
	Control	11	24.15				

Table S7. Statistical results of the Friedman test of TGF- β 1 cytokine parameters

Statistical results of the Friedman test of TGF-β1 cytokine parameters								
Group	Day	N	Mean	Mean Ranks	SD	Friedman Analysis		
						Result	Conclusion	
Therapy	0	11	411.085	2.40	187.368	P =0.041	There are differences.	significant
	3	11	346.231	2.00	171.603			
	5	11	295.246	1.60	138.318			
Control	0	11	486.766	2.30	443.568	P = 0.165	There is no difference.	significant
	3	11	423.164	2.00	290.355			
	5	11	416.539	1.70	330.233			
Statistical results of the Mann-Whitney U test of TGF-β1 cytokine parameters								
Day	Group	N	Mean Ranks	Mann-Whitney U Test Analysis				
				Result	Conclusion			
0	Therapy	11	20.20	P = 0.871	There is no significant difference			
	Control	11	20.80					
3	Therapy	11	18.45	P = 0.267	There is no significant difference			
	Control	11	22.55					
5	Therapy	11	17.65	P = 0.123	There is no significant difference			
	Control	11	23.35					

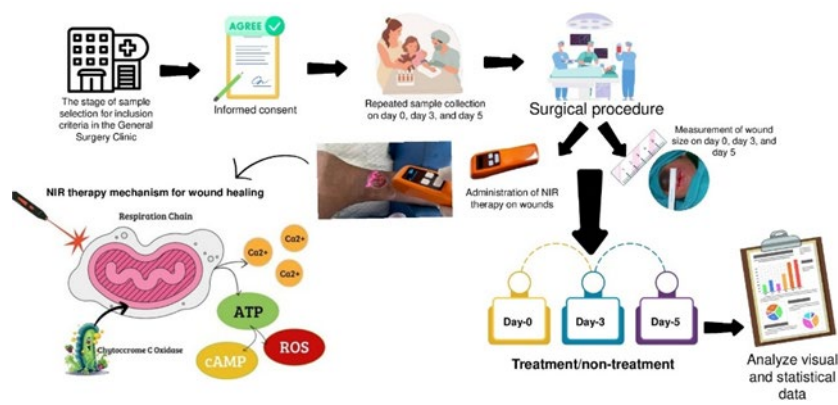


Figure S1. Procedures and Mechanisms of NIR Therapy in Wound Healing

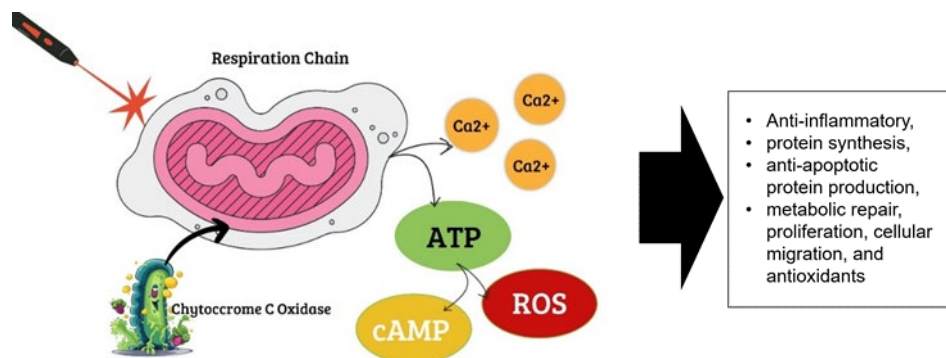


Figure S2. This schematic diagram illustrates the mechanism of photobiomodulation by near infrared light at a wavelength of 630-1000 nm. This light targets the mitochondrial enzyme, namely Cytochrome Oxidase C, resulting in two main effects: 1) direct stimulation of mitochondrial respiration and 2) dissociation of nitric oxide, which indirectly supports increased mitochondrial respiration. Both of these processes increase the production of ATP, cAMP, reactive oxygen species (ROS), and intracellular calcium. This increase affects downstream signaling pathways, which then activate various biological processes, including anti-inflammatory effects, protein synthesis, and production of anti-apoptotic proteins, as well as repair, metabolism, proliferation, cellular migration, and antioxidant activities.