**1 TNF-α Levels by Cancer Stage**

There was no statistically significant variation in TNF-α levels among colon cancer patients across different stages of the disease. This finding is represented in Figure 1 and Table 1.

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**Figure 1:** Comparison of concentration TNF-α based on differences between Stages of colon cancer.

**Table 1** Comparing the levels of TNF-α in seropositive people with colon cancer at different disease stages.

|  |  |  |
| --- | --- | --- |
| **Tukey's multiple comparisons test** | **Summary** | **Adjusted P Value** |
| **Stage 1 vs. Stage 2** | **ns** | **0.9758** |
| **Stage 1 vs. Stage 3** | **ns** | **>0.9999** |
| **Stage 1 vs. Stage 4** | **ns** | **0.9948** |
| **Stage 2 vs. Stage 3** | **ns** | **0.9639** |
| **Stage 2 vs. Stage 4** | **ns** | **0.9999** |
| **Stage 3 vs. Stage 4** | **ns** | **0.9912** |

**2 TNF-α Levels Based on Treatment**

Regarding treatment, there was no substantial difference in TNF-α levels across individuals undergoing different therapies for colon cancer. Specifically, the mean serum TNF-α levels were as follows: 235.2 ± 31.96 ng/L for patients undergoing biological therapy (n=10), 206.1 ± 16.78 ng/L for those receiving chemotherapy (n=13), 191.2 ± 45.19 ng/L for patients under immunotherapy (n=6), and 220.8 ± 24.53 ng/L for those who had surgical treatment (n=11). Statistical analysis showed no significant difference between these groups (P=0.7514). Details are provided in Figure 2



**Figure 2:** Comparison of TNF-α concentration based on different treatment types for colon cancer. The figure shows no significant differences in TNF-α levels among patients undergoing biological therapy, chemotherapy, immunotherapy, or surgical treatment.

**3. COX-2 Levels by Cancer Stage**

In the evaluation of COX-2 (U/L) levels among patients diagnosed with colon cancer, there was no statistically significant variation across different stages of the disease. The overall P value for these comparisons was 0.4048, indicating no significant differences between the stages (ns).**Figure 3**

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**Figure 3:** Comparison of COX-2 concentrations based on the differences between stages of colon cancer. The mean COX-2 levels recorded for each stage were as follows: Stage 1 (n=11) had a mean level of 137.7 ± 15.55, Stage 2 (n=13) displayed 153.2 ± 15.46, Stage 3 (n=11) showed 120.7 ± 16.5, and Stage 4 (n=5) had a mean level of 163.8 ± 28.85. The ranges for each stage were 69.53 - 237.3 for Stage 1, 78.2 - 236.1 for Stage 2, 77.59 - 239.4 for Stage 3, and 90.05 - 235 for Stage 4.

**4 COX-2 Levels Based on Treatment**

Regarding treatment modalities, there was no substantial difference in COX-2 levels across individuals undergoing different therapies for colon cancer. The overall P value for the comparison of these treatments was 0.0843, indicating no significant differences among treatment types (ns). These findings suggest that COX-2 levels remain consistent across various treatment modalities.

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**Figure 4**: Mean COX-2 levels recorded for different treatment modalities show variation, but not statistically significant differences. In patients undergoing biological therapy (n=10), the mean COX-2 level was 108.9 ± 12.68, while those receiving chemotherapy (n=13) had a mean of 153.2 ± 15.46. Patients treated with immunotherapy (n=6) exhibited a mean COX-2 level of 176.4 ± 26.71, and those who underwent surgical treatment (n=11) had a mean of 137.7 ± 15.55. The observed ranges of COX-2 levels were as follows: 77.59 - 204.3 for biological therapy, 78.2 - 236.1 for chemotherapy, 90.05 - 239.4 for immunotherapy, and 69.53 - 237.3 for surgical treatment.

**5 NOX1 Levels Based on Disease Stage**

There was no statistically significant variation in the levels of NOX1 (ng/L) across different stages of illness in individuals diagnosed with colon cancer. The overall P value for these comparisons was 0.9224, indicating no significant differences between groups (ns). These results indicate that NOX1 levels remain relatively consistent across different disease stages in colon cancer patients.

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**Figure 5:** Comparison of NOX1 concentrations across different stages of colon cancer. The mean NOX1 levels recorded for each disease stage were as follows: Stage 1 (n=11) had a mean level of 8.401 ± 0.973, Stage 2 (n=13) displayed 8.852 ± 0.7963, Stage 3 (n=11) showed 8.077 ± 1.048, and Stage 4 (n=5) had a mean level of 8.998 ± 1.441. The ranges for each stage were 4.12 - 13.25 for Stage 1, 5.29 - 13.41 for Stage 2, 4 - 14.92 for Stage 3, and 4.45 - 13.21 for Stage 4.

**6 NOX1 Levels Based on Treatment**

In the analysis of NOX1 levels concerning treatment for colon cancer, the results indicate no substantial differences among individuals undergoing various therapeutic approaches. The overall P value for these comparisons was 0.9223, suggesting no significant differences among the treatment groups (ns).

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**Figure 6:** Comparison of NOX1 concentrations based on different types of treatment for colon cancer. The mean NOX1 levels for each treatment group were as follows: Biological Therapy (n=10) had a mean level of 8.034 ± 1.158, Chemotherapy (n=13) displayed 8.852 ± 0.7963, Immunotherapy (n=6) showed 8.917 ± 1.18, and Surgical Treatment (n=11) had a mean level of 8.401 ± 0.973. The ranges of NOX1 levels were 4 - 14.92 for Biological Therapy, 5.29 - 13.41 for Chemotherapy, 4.45 - 13.21 for Immunotherapy, and 4.12 - 13.25 for Surgical Treatment.