

## Protein and Albumin Levels in pulmonary tuberculosis

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**Abstract:** Introduction: The aim of this study was to investigate the serum protein and albumin levels in patients with pulmonary tuberculosis. **Material and methods:** Eighty (80) patients with tuberculosis and 40 healthy controls were included in this study. Serum total protein and albumin were analyzed using Chemistry auto analyzer using kit method. **Results:** Total protein and albumin were found to decrease in patients with pulmonary tuberculosis as compared with healthy controls. **Conclusions:** Therefore serum protein and albumin can be used as marker to assist the diagnosis, treatment and prognosis of pulmonary tuberculosis patients.

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**Keywords:** pulmonary tuberculosis, proteins, albumin

### 1. Introduction

Pulmonary tuberculosis is communicable disease. It is caused by mycobacterium tuberculosis. One third of world's population is infected with tuberculosis one million of these develop the disease and almost two million die out of these curable disease [1]. Acute phase reaction is a collective designation for change in serum protein and albumin levels encompassing symptoms such as tiredness and malaise induced by infection, inflammation or trauma [1]. Albumin is one of the most important serum proteins produced in the liver. It represents 50 to 60% by weight of all plasma proteins. Recent evidence indicates that albumin may provide antioxidant protection by functioning as a serum peroxidase in the presence of reduced glutathione, which is an intracellular antioxidant [2]. Epidemiological data consistently show that reduced levels of serum albumin, is associated with increased mortality [3-7] Aim of the present study was to determine the serum albumin and protein levels in the PTB patients and healthy controls.

### 2. Material and Methods

A study was conducted medical units of Liaquat University of Medical & Health Sciences (LUMHS) Jamshoro. 80 patients (both gender) with pulmonary tuberculosis. Sixty healthy subjects (34 men, 26 women) those attending the outpatient clinic of L.U.H hospital were recruited as control. Total serum protein and albumin, were measured for both patients and healthy control. Blood was collected and centrifuged at 3000 rpm for about 10 minutes. Serum total protein and albumin were analyzed using Chemistry auto analyzer using kit method.

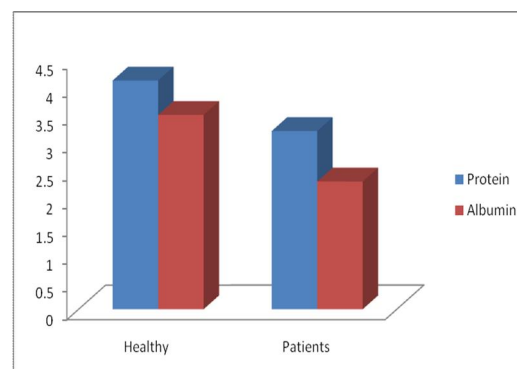
Statistical analysis was carried out using software package for social sciences -16 version.

### 3. Results

Table I shows the levels of protein and albumin in patients with pulmonary tuberculosis and healthy subjects. There was a decreased level of proteins and albumin in patients was compared with the control group.

**Table: 1**

	Healthy	Patients
<b>Protein</b>	<b>4.12±0.12</b>	<b>3.21±0.1</b>
<b>Albumin</b>	<b>3.5±1.3</b>	<b>2.3±0.8</b>



**Figure 1.** The levels of protein and albumin in patients with pulmonary tuberculosis and healthy subjects.

### 4. Discussion

The present study shows significantly lower levels of total protein and albumin in subjects with pulmonary tuberculosis. (8) Albumin is a negative acute phase protein which the plasma value decreases during infection, injury or stress possibly as a result of increased metabolic need for tissue repair and free radical neutralization (9, 10). Lower levels of total protein and albumin in this study might have been

caused also by poor appetite, malnutrition and mal-absorption commonly observed in tuberculosis. The lower level of albumin may therefore be one of the complications associated with pulmonary tuberculosis. (10) The result of this study shows lower protein and albumin level in pulmonary tuberculosis patients. These could be associated with heavy load of free radicals, oxidative stress and lipid peroxidation. Improved nutrition and supplementation with antioxidant therapy in the treatment of pulmonary tuberculosis may prevent the further complications.

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