

# Assessment Of Vitamin B12, Copper And Potassium Levels In Adults Patients With Tinnitus In Hilla City –Iraq

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## ABSTRACT

**Background:** Tinnitus is seeing ringing in the ears. It affects about 15 to 20 percent of the population. It is not considered a disease in and of itself - it is an effect of an underlying medical condition, for example, age-related poor hearing or an ear injury or a circulatory problem. It is either that the individual hears it and is known as self-tinnitus, or the adjacent individual is known as objective tinnitus. Studies have shown the prevalence of tinnitus worldwide up to 15%, and several studies have shown a relationship between metabolism and tinnitus. Although the mechanics and the mechanism for the etiology are not well known, this study aimed at the HBA1c and the lipid levels; For the purpose of excluding them from the study that is being conducted and studying other effects, we worked on estimating the levels of potassium, copper and vitamin B12; To know the difference between the two groups (healthy and sick).

We found that the percentage of potassium is somewhat lower in the people who suffer from tinnitus compared to healthy people. As for the percentage of copper and vitamin B12, their levels are very low in sick people compared to healthy people. **Method:** In this case –control study, (50) patients with tinnitus and (50) healthy controls were examined , serum level potassium, copper and vitamin B12 were measured by Atomic Absorption and ELISA . **Results:** After measurements and comparisons between tinnitus patients control group, results showed high significant differences in potassium, copper and vitamin B12 . And no relation between vitamin B12 and potassium , and strong with copper . **Conclusion:** It was concluded through the study that the possibility of tinnitus increases as the proportion of trace elements in the serum decreases for people because it acts as an important neurotransmitter to transmit sound waves to the brain There is an unclear effect between potassium and vitamin B12, due to the weak absorption relationship, and there are other stronger factors that affect one of them without the other.

**Keywords:** Tinnitus , potassium, copper and vitamin B12.

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## INTRODUCTION

Tinnitus is the normal neurosensory issue of seeing a non-verbal Qclamor like ringing with no genuine source identified with it. This issue exists in both male and female patients at any age, and it can carry numerous issues, for example, troubles with dozing, fixation, and mental issues, along these lines influencing their personal satisfaction. Epidemiological examinations on the tinnitus commonness recommend a pervasiveness of 10% with no connection to the patients' gender[1]. Also as indicated by another investigation in South Korea, this issue had a predominance of 20.7% with 69.2% of these patients having no bad things to say of the tinnitus meddling with their lives, 27.9% having some uneasiness, and 3% having serious issues with it[2]. Studies propose that a glitch in the limbic framework and the thoughtful piece of the autonomic sensory system because of the bogus signs of tinnitus bring issues, for example, nervousness, fixation troubles, and frenzy attacks[3]. The pathophysiology of tinnitus is for sure convoluted and not yet decided; in any case, information are recommending a kind of communication between the fringe and focal pathologies of the sound-related framework[4]. evaluated 50 million individuals in the United States (16%) experience some type of tinnitus Roughly 20 million individuals (6%) battle with ceaseless tinnitus, while 2,000,000 (< 1%) are totally incapacitated from it[5].

## MATERIALS AND METHODS

### Subjects and study design

This examination was taken on patients who visited the ENT facility Segment with the principle objection of two additional tons From a half year. A total assessment of the clinical history was made, Every patient experienced an endoscopy assessment, An essential sound-related assessment. Wellbeing points without Tinnitus, hearing disability and other ear maladies Filled in as an inner benchmark group ... we chose patients Whose sound information satisfied the SNHL consideration rules. Patients languishing Other ear illnesses were avoided. A full clinical history assessment was performed, and blood, potassium, copper and nutrient B12 levels were investigated. All tests were Educated assent was It was acquired from all investigation members. Target estimations Unadulterated hearing tests (PTA). In one-sided tinnitus patients, We picked the comparing ear to be the tried ear. On the off chance that the patient He had two tinnitus, the correct ear was picked for the test Ear. An unbalanced autosomal test was performed with the pair on The two ears. In the soundproof cabin.

## RESULTS

Regarding serum potassium, copper and vitamin B12 show high significant increase in tinnitus patient as compared with control groups (Table1).

**Table1 : Comparisons of serum levels potassium, copper and vitamin B12 between tinnitus patients and their controls.**

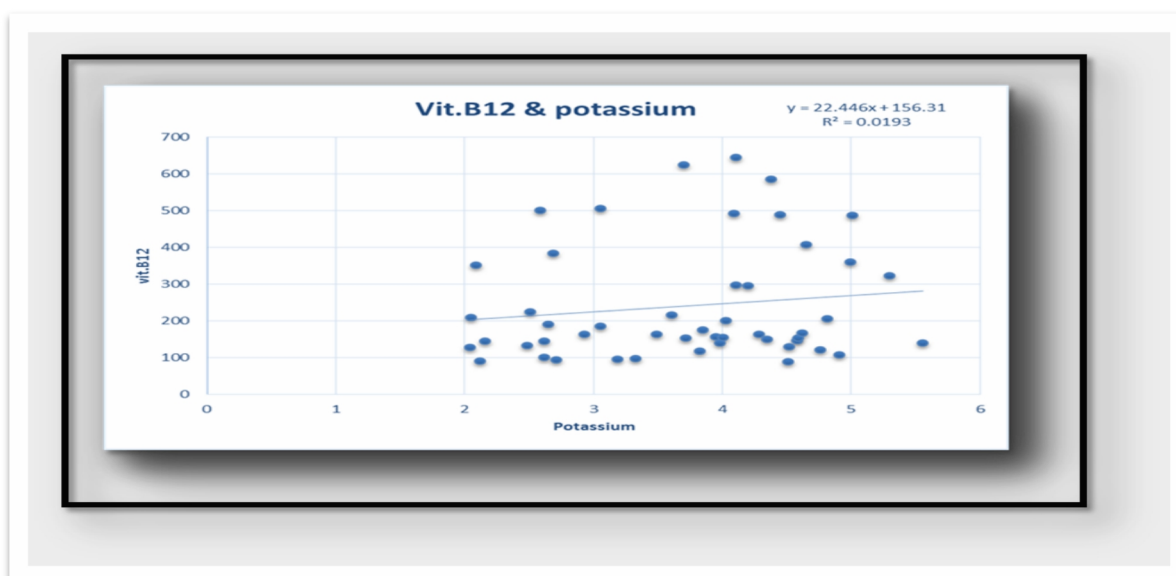
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Trace elements	Subject	No.	Mean	p-value
+	Patients	50	3.71+0.97	HS
	Control	50	4.32+0.59	
Cu	Patients	50	68.24+29.25	HS
	Control	50	104.22+27.76	
Vt.B12	Patients	50	239.63+156.61	HS
	Control	50	500.26+135.07	

Comparison of Vt .B12 Vs K its No significant but with Copper its high significant (table 2)

**Table2:Correlation between Vitamin B12 and another parameter.**

Trace elements	Subject	No.	R	p-value
Vt.B12 Vs K	Patients	50	+0.1	NS
	Control	50	-0.1	
Vt.B12Vs Cu	Patients	50	+0.6	HS
	Control	50	+0.3	



Figure(1);correlation between Vit.B12 &K

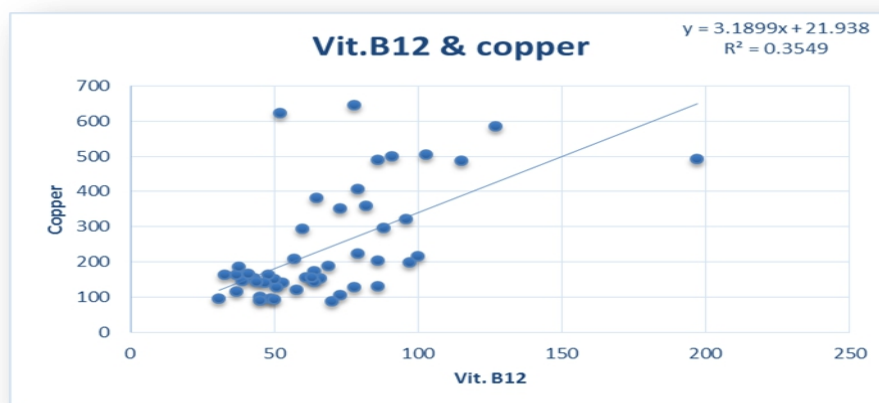


Figure (2);correlation between Vit.B12&Cu

**Statistical Analysis**

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The outcomes were communicated as mean  $\pm$  SD . Factual investigations were performed with SPSS form 23.0 programming and Microsoft exceed expectations variant 2016. A p estimation of  $< 0.05$  was viewed as measurably huge.

1-Descriptive examination was utilized to show the mean and standard deviation of factors.

2-The hugeness of contrast between mean qualities was evaluated by p esteem.

3-The likelihood  $P < 0.05$  = significant,  $P > 0.05$  = non-significant.

### DISCUSSION

The study included 50 patients with (range, 18-70 years). Patient demographic data and trial protocol are listed in Table 1.

Epidemiologic examinations have reliably revealed that tinnitus commonness in grown-ups ranges from about 10% to 15% of the populace around the world [6]. The pervasiveness of incessant tinnitus in the US expanded with expanding age, topping at 14.3% somewhere in the range of 60 and 69 years of age.[7] The commonness of tinnitus increments with age[8]. Tinnitus has been found to influence men more than women[9]. However, in our examination, it was seen as progressively predominant in females (M:F = 2:3) Approximately, 25% of patients with tinnitus report an expansion in seriousness over time[10]. In the Beaver Dam posterity investigation of in excess of 3000 grown-ups between the ages of 21 and 84 years concentrated somewhere in the range of 2005 and 2008, 10.6% detailed tinnitus of in any event moderate seriousness or causing trouble nodding off[11]. In patients with sound-related neuropathy range, the predominance of tinnitus was seen as around 67%, for the most part reciprocal (89.5%), and seen all the more frequently in females (70.52%). The abstract contribute was low-pitched people with low recurrence hearing misfortune and the apparent pitch was high with a level setup of misfortune [12].

Abtahi H, Yazdkhasti was the first to study the effect of copper on abdominal patients as the current study concluded, a relationship between serum Cu level and Tinnitus occurs. Given the idea that trace elements are among the antioxidants Micronutrients, determine the cause-and-effect relationship between the trace elements Tinnitus may shed some light on the treatment of the disease, which requires further studies(. 22=)As low levels of copper serum and severe syndromes Brain hypoplasia and hearing loss have been reported [13]. In the study. Colleagues developed another hormonal disorder Hearing auditory nervousness and other surface disorders Copper serum was low, indicating recovery after copper supplementation SOD [14]. It transforms the cell from radical damage and thus protects - It protects one of the SODs [superoxide and hydroxyl] [15] It is one of many antioxidant enzymes in snails[16].

An abundance of metabolic and root formation processes Coclea's free SOD oxygen can justify high levels Be in it. Streptococcus helical cells and hair cells SOD Syrian vascular cells with defects or defects They are extremely sensitive and susceptible to fracture [17]. depends on The function of the above detoxase enzyme is dependent on copper[18]. Low levels of copper in the blood can lead to disturbances Therefore, it leads people to prepare for the function of SOD enzyme Listen to tinnitus, and all of these studies are identical to the results we obtained. Other rare cases have also been studied at the university It is

potassium. Our first study is to estimate the level of potassium among people suffering from tinnitus , which is one of the minerals that are important in the body, because of its importance in the transfer of nervous fluids through the transfer and exchange of potassium and sodium ions through the cellular membranes of the nerves and also works to improve brain functions . As well as its function to relax the nerves, as muscle spasm is one of the main symptoms of its deficiency [19]. Because of the importance of the presence of potassium for neurotransmission and the brain[20], we found a relationship between them. Vitamin B12 deficiency may cause demyelination of nerve cells in the cochlear nerve, which leads to hearing loss and tinnitus [21]. Additionally, low levels of vitamin B12 and folate are associated with the destruction of microvascular vessels in the vascular strains, which may lead to a decrease in the potential of the inner cortex, hearing loss and tinnitus[22]. Martvnez-Vega et al. In their study, they demonstrated, for the first time, that the relationship between hyperhomocysteineemia caused by folic acid deficiency and early hearing loss implied poor metabolism of coxic acid and the associated oxidative pressure.Cobalamin deficiency can appear as neurological and bloody disorders. In light of the results of this study, cobalamin deficiency may also appear with tinnitus only in the absence of other manifestations and the authors suggest identification of serological cobalamin in patients with chronic tinnitus[23]

And through our current study, where I found there is a relationship between potassium and vitamin B12 levels in people with tinnitus.

( $r=0.1$  ,  $p>0.05$  ) show in figure (1) it is non- significant Where the relationship between vitaminB12 and copper figure (2) was a fairly strong positive relationship where the value of  $r = 0.6$  while the value of  $P < 0.001$  it is consider High significant

### CONCLUSION

It was concluded through the study that the possibility of tinnitus increases as the proportion of trace elements in the serum decreases for people because it acts as an important neurotransmitter to transmit sound waves to the brain There is an unclear effect between potassium and vitamin B12, due to the weak absorption relationship, and there are other stronger factors that affect one of them without the other.

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