

AWARENESS ABOUT GLUTATHIONE: A MIRACLE ANTIOXIDANT

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ABSTRACT

Glutathione is a natural antioxidant that is produced in human, animals as well as plants. It detoxifies the body from harmful chemicals and metabolites. It functions by reducing oxygen stress in the body and also maintains exogenous antioxidants in their active state. It prevents the body from a number of diseases. Deficiency of glutathione makes the body more prone to anemia, infectious diseases, cancer, diabetes etc. Treatment of deficiency usually involves giving supplemental glutathione orally, parenterally or topically depending on the need of patient. This survey aimed to find out the awareness about glutathione, its functions, consequences and treatment of its deficiency in pharmacy undergraduates. It was observed that out of 100 students only 44% knew about glutathione, 33 % about its functions, 25 % about the consequences of its deficiency and 12 % about its treatment approach. Thus it is concluded that awareness about glutathione is very less among the pharmacy undergraduates.

KEY WORDS

Glutathione, antioxidant, detoxifier, oxidative stress, free radicles

INTRODUCTION

Glutathione is a natural occurring substance which is amply present in the cells of living species including mammals, plants, microbes (fungi, bacteria) etc. Structurally, it is a tripeptide thiol. Glutathione performs multiple tasks. Functionally, it is an antioxidant and almost all of its actions are due to this property [1].

Glutathione performs many important physiological functions. Its major function is the protection of the body from the harmful consequences resulting from the production of free radicles and reactive oxygen compounds [2]. Glutathione is involved in all the important processes occurring in the body such as synthesis of biomolecules, metabolism of enzymes and drugs as well as play a vital role in detoxification of toxins, immunology and endocrinology. It also has a prominent role in prevention of body against cancer[3]. Apart from this function, glutathione also assists exogenous antioxidants i.e. Vitamin E and C to perform their respective functions by keeping them in their active states [4].

Glutathione is a natural detoxifier. Glutathione synthase is the principle enzyme which is responsible for the formation of glutathione in the body. Deficiency of glutathione is associated with the low levels of this enzyme in the body. Deficiency of glutathione may lead to mild as well disastrous effects. Patients with low levels of glutathione may suffer from neurodegenerative diseases such as Parkinson's, Alzheimer's as cellular processes occurring in brain are being affected the most [5]. Further consequences of glutathione deficiency are anemia, AIDS, cancer, diabetes, infertility etc. Deficiency of glutathione could be detected by determining the level of glutathione in body cells such as white blood

cells and red blood cells. But unfortunately due to the unavailability of these tests in the commercial market, their high price and inconvenience still leaves a question mark for testing glutathione levels in the body. Very little data is available regarding the natural sources of glutathione that can be used in glutathione deficiency. Glutathione is not readily found in foods but there are many foods that can help to achieve the desire level of glutathione in the body such as garlic, avocado, broccoli, spinach, tomatoes etc.

Treatment approaches for glutathione deficiency includes administration of N-acetyl cysteine which serves as an antidote in glutathione deficiency. This compound has been found to markedly increase the intracellular levels of glutathione in the body. (Kondala R Atkuri, 2007) The second approach for treating glutathione deficiency is to administer glutathione. Glutathione is available in different dosage forms in the market such as glutathione injections, patches and as well as cream. This vast variety of dosage forms in the market reduces the risk of developing potential adverse effects.

Our research group has done this types of activity for awareness of different diseases which is very useful for healthcare professionals [6-24].

METHODOLOGY

This is a survey based study on the awareness of glutathione among the pharmacy undergraduates. The students were questioned about glutathione, its functions, and consequences of its deficiency and treatment of its deficiency. The data was collected from 100 students. All the data was evaluated through SPSS.

RESULT AND DISCUSSION

Glutathione is a miracle antioxidant. This survey is based on the awareness about glutathione in pharmacy undergraduates. For this purpose 100 pharmacy undergraduates were asked different questions. Results are given in Table 1-5 and Figures 1-4. Table 1 shows the statistic of participant with mean median and mode.

The first question in the survey was about glutathione. It is observed that only 44% of the Pharmacy students have awareness whereas 56% of the students have no awareness about glutathione table 2. The second question asked to the students was about functions of glutathione. Only 33% of the students knew about the functions of glutathione as compared to 67% students who do not know table 3. The third question to the students was about the consequences of glutathione deficiency. Only 25 % survey population had awareness about the consequences of glutathione deficiency. 75% of the students had no idea about the consequences resulting from the deficiency of glutathione table 4. The fourth question was about the treatment of glutathione deficiency. Out of 100 students who participated in the survey only 12% had knowledge about the treatment of glutathione deficiency while the remaining 88% students do not know about the treatment of glutathione deficiency table 5.

In table six the result of non parametric test chi square results are given. The p value is less than 0.05 which is .00 for second third and fourth question indicates highly significant results. Only the question one had 0.230 value which is greater than 0.05. Chi square values for all questions are 1.440, 11.560, 25.000 and 57.760 with degree of freedom 1.

CONCLUSION

Thus, we conclude that only few pharmacy undergraduates have awareness about the glutathione and its importance and they must be aware about this miraculous antioxidant

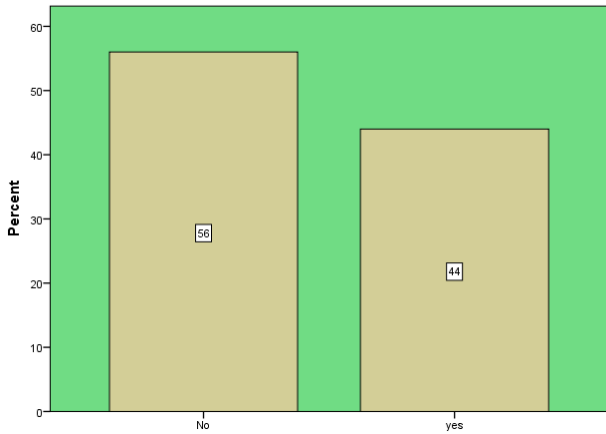


Figure 1: Awareness about glutathione

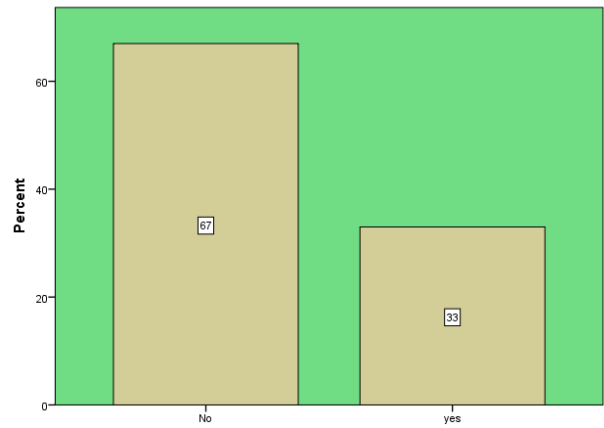


Figure 2: Awareness about functions of glutathione

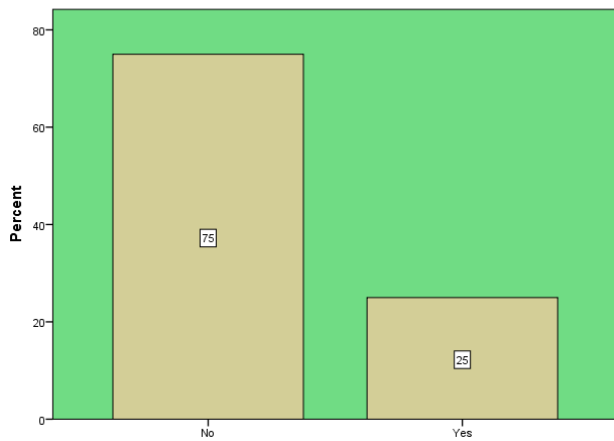


Figure 3: Awareness about consequences of glutathione deficiency

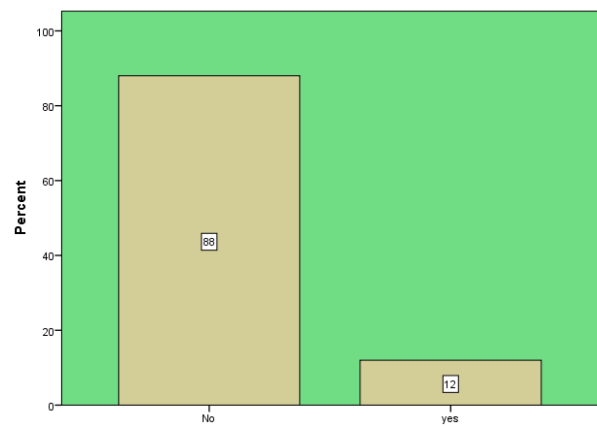


Figure 4: Awareness about treatment for glutathione deficiency

Table 1: Statistics of Participants

		What is glutathione	What are the functions of glutathione	What are the consequences of glutathione deficiency	What is the treatment for glutathione deficiency?
N	Valid	100	100	100	100
	Missing	0	0	0	0
Mean		.4400	.3300	.2500	.1200
Median		.0000	.0000	.0000	.0000
Mode		.00	.00	.00	.00
Std. Deviation		.49889	.47258	.43519	.32660

Table 2:What is glutathione

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid No	56	56.0	56.0	56.0
Valid yes	44	44.0	44.0	100.0
Total	100	100.0	100.0	

Table 3:What are the functions of glutathione

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid No	67	67.0	67.0	67.0
Valid yes	33	33.0	33.0	100.0
Total	100	100.0	100.0	

Table 4:What are the consequences of glutathione deficiency

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid No	75	75.0	75.0	75.0
Valid Yes	25	25.0	25.0	100.0
Total	100	100.0	100.0	

Table 5:What is the treatment for gluathione deficicency?

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid No	88	88.0	88.0	88.0
Valid yes	12	12.0	12.0	100.0
Total	100	100.0	100.0	

Table 6: Test Statistics Chi-Square

	What is glutathione	What are the functions of glutathione	What are the consequences of glutathione deficiency	What is the treatment for glutathione deficiency?
Chi-Square	1.440 ^a	11.560 ^a	25.000 ^a	57.760 ^a
df	1	1	1	1
Asymp. Sig.	.230	.001	.000	.000

a. 0 cells (0.0%) have expected frequencies less than 5. The minimum expected cell frequency is 50.0.

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