Int.J.Curr.Microbiol.App.Sci (2016) *5*(5): 822-825

International Journal of Current Microbiology and Applied Sciences
ISSN: 2319-7706 **Volume 5 Number 5 (2016) pp. 822-825**
Journal homepage: http://www.ijcmas.com

Original Research Article http://dx.doi.org/10.20546/ijcmas.2016.505.083

The Effect of the type of food on the Efficiency of the liver enzymes GPT and GOT in Black rat *Rattus rattus* (Linnaeus, 1758)

Suhad Y. Jassim*

Research Center & Natural History Museum, University of Baghdad, Iraq
**Corresponding author*

Keywords

Biochemical Tests, Liver Enzymes, Rats, Nutrition.

Article Info

Accepted:
20 April 2016
Available Online:
10 May 2016

A B S T R A C T

In this research it was measure the effectiveness of the enzymes GPT and GOT of Black rats (*Rattus rattus*). Where placed in a fixed laboratory conditions, It was used 12 rats were divided in to two groups of 6 for each group The first was given normal feed(standard commercial pellet) and the second group was given (barley grains). No significant differences at (P>0.05) in the enzymes levels of the second group compared with first group.

Introduction

Black rat (*Rattus rattus*) is omnivorous and eating a wide variety of seeds, fruit, stems, leaves, fungi, and a variety of invertebrates and vertebrates. They are generalists, and thus not very specific in their food preferences. They are similar to the tree squirrel in their preference of fruits and nuts. They eat about (15 g) per day and drink about (15m.l) (Nowak, 1991; Marsh,1994). Nutrition is an environmental factor which can have big effect on the quality of experimental results (Suckow *et al.*, 2006). Barley is a plant. The grain of barley is used to make medicine. Barley is used for lowering blood sugar, blood pressure, and cholesterol, and for promoting weight loss. It is also used for some digestive problem including diarrhea, stomach pain, and inflammatory bowel conditions (Graebner *et al.*, 2015 Cuesta *et al.*, 2015).

The distribution studies of the enzyme in various rat organs indicate that the enzyme is highly localized in the kidney, liver, brain, erythrocytes and many other organs (Xing *et al.*, 2006). If experimental rats are born and reared on one diet, there should be a period of adaptation when a different food is used (Hoag and Dickie, 1962). Aspartate aminotransferase (AST) and alanine aminotransferase (ALT): are enzymes found mainly in the liver, but also found in red blood cells, heart cells, muscle tissue and other organs, such as the pancreas and kidney (Akhtar, 2011). AST and ALT formerly are called serum glutamic

oxaloacetic transaminase (GOT) and serum glutamic pyruvic transaminase (GPT), respectively. AST or ALT levels are a valuable aid primarily in the diagnosis of liver disease (Xing *et al.*, 2006).

The aim of the present study was to determine the effect of the type of food (standard pellet and barley grains) on the effectiveness of the liver enzyme (GPT and GOT).

Materials and Methods

Animal

Adult male Black rats (weight, 120 to 170 g) were obtained from the Animal House located in the Museum of Natural History Research Center. Animals were housed in a temperature (20 to 24°C) and humidity (approximately 50%)- on a 12:12-h light: dark (The same conditions available to the White Rat (albino)) Rats were divided into two groups 6 rats each group. The first group included animals that feed on commercial standard pellets diet, while the second group includes animals that fed on barley grains.

The experiment continue four weeks measuring the weight and make laboratory analysis of the enzymes GPT & GOT. On the last day it was drawing blood from the animals and the separation of blood serum samples and placed in the freezer until the tests are done.

Measurements

The draw blood directly from the heart after anesthesia in a private collection tubes and separation of blood in the centrifuge.It was calculated AST (GOT) glutamate oxaloacetate transaminase and ALT (GPT) glutamate pyruvate transaminase effectiveness according to (Karmen *et al.*, 1955; Itoh and Srere, 1970; Schumann,2002).

Results and Discussion

Table (1) shows Means and Standard deviations of(GPT)values for the two groups of experiment, the level of GPT enzyme of second collection was:(54.1667 U/L) While the level of the first group was: (41.6667U/L).

Table (2) indicates There were no significant difference at (p>0.05)of (GPT) rate for group(2) compared with group(1) means: levels didn't show a marked effect between one group andAlso between the two groups. This proves the possibility of giving the barley grain on rats and considered as integrated food (Cuesta *et al.*, 2015). As table (3) shows Means and standard deviation of (GOT) level for two groups.

Also Table (4) indicates that is no significant differences at(P>0.05) of GOT enzyme value forsecond group whish fed on barley grain compared with first group which fed on commercial standard pellet, and this maybe indicate that barley grains are complete food because of containing of enough amount of vitamins, proteins and minerals and this will lead to be the results under normal levels (Cuesta *et al.*, 2015).

Table.1 Means _+ Standard deviation

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	gpt1	41.6667	6	8.16497	3.33333
	gpt2	54.1667	6	10.34247	4.22230

Table.2 Paired Samples Test

	Paired Differences					T	Df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Pair 1 gpt11 - gpt22	-12.50000-	16.00937	6.53580	-29.30081-	4.30081	-1.913-	5	.114

Table.3 Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	got11	36.6667	6	11.14750	4.55095
	got2	43.8333	6	8.61201	3.51584

Table.4 Paired Samples Test

	Paired Differences					T	Df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Inter+val of the Difference				
				Lower	Upper			
Pair 1 got11 - got2	-7.16667-	10.57198	4.31599	-18.26127-	3.92794	-1.660-	5	.158

We determined the activity of GPT and GOT enzymes to know if there were any marked effects on liver work and the results showed that the animals fed on barley grains had no significant changes at (p>0.05) of the two enzymes compared with the animals that fed on standard commercial pellet.

It can be concluded that feeding rats important and affect in The results of laboratory tests. In this research It was reached that barley is an integrated food As it contains nutrients (vitamins, proteins and minerals etc...) For this reason, the experiment did not show any significant difference (P>0.05) in the levels of GPT and GOT enzymes forGroup of animals fed on barley compared with those fed a standard pellet.

Acknowledgements

Researcher offers thanks to the Museum of Natural History Research Center-University of Baghdad to support research, many thanks to every one of center members especially my colleague, Instructor Mahmood Hussein who helped to complete this research.

References

Akhtar S1, Anjum FM, Rehman ZU, Riaz M, Arshad M, Basit A, Ismail (2011).Effect of zinc and iron fortification of the feed on liver and thyroid function in ratsBiol Trace Elem Res. 2011 Dec;144(1-3):894-903.

Cuesta-Marcos, A., M. Muñoz-Amatriaín, T. Filichkin, I. Karsai, B. Trevaskis, S. Yasuda, P.M. Hayes, and K. Sato. (2015). The relationships between development and low temperature tolerance in barley near isogenic lines differing for flowering behavior. Plant Cell and Physiol. 56:2312-2324.

Graebner, R.C., A Cuesta-Marcos, S. Fisk, B.O. Brouwer, S.S. Jones, and P.M. Hayes. (2015). Registration of Alba barley. J. Plant Reg. 9: 1.

Hoag, W. G., and M. M. Dickie. (1962). Studies of the effect of various dietary protein and fat levels on inbred laboratory mice. Proc. Anim. Care Panel 12:7–10.

Itoh H., Srere P.A (1970). A new assay for glutamate-oxaloacetate transaminase. Anal. Biochem.;35:405–410

Karmen A. (1955). A note on the spectrometric assay of glutamic-oxalacetic transaminase in human blood serum. J. Clin. Invest;34:131–133.

Schumann G, Bonora R, Ceriotti et al. IFCC. (2002). Primary Reference Procedures for the Measurement of Catalytic activity concentrations of enzymes at 37C.Part 5 reference procedure for the measurement of catalytic concentration of Asparatate Aminotransferease Clin. Chem. Lab. Med. 40(7):725-733.

Xing-Jiu Huang, Yang-Kyu Choi, Hyung-Soon Im, OktayYarimaga, Euisik Yoon and Hak-Sung Kim.(2006). Aspartate Aminotransferase (AST/ GOT) and Alanine Aminotransferase (ALT/GPT) Detection Techniques. PMC journal 6(7): 756–782.

Marsh, Rex E. (1994). Roof Rats. Internet Center for Wildlife Damage Management. Prevention and Control of Wildlife Damage. Retrieved 22 April 2011.

Nowak, Q.M, (1991).Walkers Mammals of the world -5thEd. Baltimore ,M.D: Johns Hopkins University Press.

Stroud, D.C. (1982). Population dynamics of *Rattus rattus* and *R. norvegicus* in a riparian habitat. Journal of Mammalogy 63(1): 151-154.

Suckow, M A, Weisbroth, SH; Franklin CL, eds. (2006). The laboratory Rat, 2nd ed. Elsevier Academic Press, San Diego, C A.

How to cite this article:

Suhad Y. Jassim. 2016. The Effect of the type of food on the Efficiency of the liver enzymes GPT and GOT in Black rat *Rattus rattus* (Linnaeus, 1758). *Int.J.Curr.Microbiol.App.Sci*.5(5): 822-825. doi: http://dx.doi.org/10.20546/ijcmas.2016.505.083