INTRODUCTION

Heavy metals are natural constituents of the earth's crust, but in discriminate human activities have drastically altered their geochemical cycles and biochemical balance (Mcintyre 2003). This results in accumulation of metals in plant parts having secondary metabolites, which is responsible for a particular pharmacological activity, prolonged exposure to heavy metals such as cadmium, copper, lead, nickel, and zinc can cause deleterious health effects in humans, molecular understanding of plant metal accumulation has numerous biotechnological implications also, the long term effects of which might not be yet known (Yadav, 2010). Ferner (2001) stated that if unrecognized or inappropriately treated, toxicity can result in significant illness and reduced quality of life so It is important to take protective measures against excessive exposure to heavy metals. Roberts (1999) reported that heavy metals might enter the human body through food, water, air, or absorption through the skin when they are exposed to humans in agriculture and in manufacturing, pharmaceutical, industrial, or residential settings. Industrial exposure accounts for a common route of exposure for adults and Ingestion is the most common route of exposure in children.

MATERIALS AND METHODS

Animal groups and experimental design

Ninety adult males Wistar rats weighting about (160-220 gram each) was allocated for the experiments. They were then divided into 3 groups of 30 rats each. All groups of rats were kept under standard conditions (Temperature, light, humidity). Rats were fed with standard chow and free tap water when they will be out of metabolic cage. Then, rats were fed with food cooked into two types of locally cooking pots. These were Atmonia and Pepsi cans pots. They were known as “Cooking Halla”. All test animals were used after the time of adaptation under laboratory conditions.

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**RESULTS AND DISCUSSION**

**Feeding technique**

Rats were fed for three months on a food made out of millet flour. Millet flour which prepared by addition of millet flour to cool water and kept for two hours for fermentation. Then the fermented food was cooked in the test pots (Atmonia, Pepsi cans) on a calm fire. Each pot received 9 Kgs of fermented homogenous millet dissolved in tap water for serial cooking’s. Each cooked food from the two cooking pots collected separately in sterilized clean trays and kept until dry. The dried food was milled until became fine and kept under laboratory conditions until use. Every one rat of the two test group (Atmonia, Pepsi can) was fed into 3gms/day of cooked food using feeding sucker plastic bottle. The control rats were fed into normal feeding chow as described above. All test and control rats were kept under laboratory conditions.

All rats were fed into food consists of protein (meat) to avoid cannibalism.

**Collection of Blood Samples**

Blood samples were collected by cardiac puncture and allowed to clot for 2 hours at room temperature, followed by centrifugation at 3500 rpm for 10 minutes to obtain the serum.

Estimation of AST and ALT according to Murray et al, 1984 and Fischbach et al, 2009 respectively

**Table 1** means of ALT from Wistar rats after feeding on feed cooked in cocking pots made of Atmonia and Pepsi cans compared with normal range and control after one months.

| Treatment      | Total | Mean |
|----------------|-------|------|
| Atmonia        | 172.25 | 34.45|
| Pepsi cans     | 156.54 | 31.31|
| Normal reading | 157.50 | 31.50|
| Control        | 113.13 | 22.63|
| Grand total    | 599.42 | 29.97|
| Grand mean     |       |      |

The results are expressed as Mean (n = 10) per treatment and respective control groups. Levels of significance values was, **p<0.01**, considered to be statistically significant.

CV% = 9%  \ SE± = 1.71

**Table 2** means of ALT from Wistar rats after feeding on feed cooked in cocking pots made of Atmonia and Pepsi cans compared with normal range and control after two months.

| Treatment      | Total | Mean |
|----------------|-------|------|
| Atmonia        | 231.36 | 46.27|
| Pepsi cans     | 199.95 | 39.99|
| Normal reading | 152.50 | 30.50|
| Control        | 113.13 | 22.63|
| Grand total    | 696.94 | 34.85|
| Grand mean     |       |      |

The results are expressed as Mean (n = 10) per treatment and respective control groups. Levels of significance values was, **p<0.01**, considered to be statistically significant.

CV% = 15.6%  \ SE± = 3.44

**Table 3** means of ALT from Wistar rats after feeding on feed cooked in cocking pots made of Atmonia and Pepsi cans compared with normal range and control after three months.

| Treatment      | Total | Mean |
|----------------|-------|------|
| Atmonia        | 281.36 | 56.27|
| Pepsi cans     | 249.95 | 49.99|
| Normal reading | 157.50 | 31.50|
| Control        | 113.13 | 22.63|
| Grand total    | 801.94 | 40.10|
| Grand mean     |       |      |

The results are expressed as Mean (n = 10) per treatment and respective control groups. Levels of significance values was, **p<0.01**, considered to be statistically significant.

CV% = 13.6%  \ SE± = 3.45

**Table 4** means of ALT from Wistar rats after feeding on feed cooked in cocking pots made of Atmonia and Pepsi cans after one month.

| Treatment      | Total | Mean |
|----------------|-------|------|
| Atmonia        | 707.63 | 141.53|
| Pepsi cans     | 588.57 | 117.71|
| Normal reading | 542.50 | 108.50|
| Control        | 414.39 | 82.88|
| Total          | 2253.09 | 112.65|

The results are expressed as Mean (n = 10) per treatment and respective control groups. Levels of significance values was, **p<0.01**, considered to be statistically significant.

CV% = 11%  \ SE± = 7.82

**Table 5** means of AST from Wistar rats after feeding on feed cooked in cocking pots made of Atmonia and Pepsi cans compared with normal reading and control after two months.

| Treatment      | Total | Mean |
|----------------|-------|------|
| Atmonia        | 1000.87 | 200.17|
| Pepsi cans     | 762.75  | 152.55|
| Normal reading | 542.50  | 108.50|
| Control        | 414.39  | 82.88|
| Total          | 2720.51 | 136.03|

The results are expressed as Mean (n = 10) per treatment and respective control groups. Levels of significance values was, **p<0.01**, considered to be statistically significant.

CV% = 15.8%  \ SE± = 13.6

**Table 6** means of AST from Wistar rats after feeding on feed cooked in cocking pots made of Atmonia and Pepsi cans compared with normal reading and control after three months.

| Treatment      | Total | Mean |
|----------------|-------|------|
| Atmonia        | 1249.87 | 249.97|
| Pepsi cans     | 1111.00 | 222.20|
| Normal reading | 542.50  | 108.50|
| Control        | 414.39  | 82.88|
| Grand total    | 3317.76 | 165.88|
| Grand mean     |       |      |

The results are expressed as Mean (n = 10) per treatment and respective control groups. Levels of significance values was, **p<0.01**, considered to be statistically significant.

CV% = 13.5%  \ SE± = 14.2
Table (1) and Fig 1 indicated that AST for Atmonia and Pepsi cans were higher, in the first, second and third month compared with the control. These results were clearly in line with Kim, (2010) who reported that heavy element such as Pb, Fe, Cu and Al were considered as the main reasons for high elevation of AST and ALT. The results obtained from this study were supported the assumption that heavy elements released in feeds cooked in cooking pots made of Atmonia and Pepsi cans were the main reasons of high elevation of liver functioning enzymes of Wistar rats such as AST, ALT and ALP. Alkaline phosphatase (ALP) an enzyme also found in the liver, bile ducts, and bones (Ki-Soo Kang, 2013). High levels of these enzymes may cause liver damage or disease, a blocked bile duct, or bone disease. Also agree with (Robert, 2010) who reported that AST has cytosolic and mitochondrial forms and is present in tissues of the liver, heart, skeletal muscle, kidneys, brain, pancreas, and lungs, and in white and red blood cells. AST is less commonly referred to as serum glutamic oxaloacetic transaminase and ALT as serum glutamic pyruvic transaminase.

Table (2, 3) and Fig 1 showed increase level of ALT in the second and third months respectively compared to their controls. This result also in line with Kim, (2010). In analysis of variance, there was significant difference between groups at $P \leq 0.01$.

Table (4) and Fig 2 indicated that AST for Atmonia and pepsi cans were increase in levels by increasing the time of treating. (McLin and Yazigi, 2011) reported that ALT and AST specific marker of hepatocellular necrosis. Table (5, 6) and Fig 2 indicate increase level of AST and ALT in the second and third months respectively compared to their controls. In analysis of variance, there was significant difference between groups at $P \leq 0.01$.

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**How to cite this article:**

Tarig Elrayah.M, Eltayeb et al.2017, Levels of AST And Alt In Wistar Rats Treated With Heavy Metals Released From Atamonia And Pepsi Cans (=Tins=) As Cooking Pots During Feeding. *Int J Recent Sci Res.* 8(5), pp. 16833-16835. DOI: http://dx.doi.org/10.24327/ijrser.2017.0805.0225

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