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HAASE ENZYME AS INDICTER FOR DIAGNOSING THE RHEUMATOID ARTHRITIS (RA) DISEASE FOR HUMAN

Sawsan Arfan Maaroof*

Collage of sciences, Clinical Biochemistry Department, University of Al Mustansiriya Baghdad- Al Mustansiriya Distract- Iraq.

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***Corresponding Author**
Sawsan Arfan Maaroof
Collage of sciences, Clinical Biochemistry Department, University of Al Mustansiriya Baghdad- Al Mustansiriya Distract- Iraq.

ABSTRACT

In this study, the activity of (HAase) enzyme for (30) serum samples of patients suffering from (RA) were experimentally investigated. Serum samples are gathered from women suffering from RA disease at age range from 20-50 years old. Same number of serum samples is also gathered from normal women at age range (20-50) years old as a control case. The activity of HAase enzyme is measured by using Alfred linker method. The findings indicates that, the enzyme level significantly increased for patients suffering from (RA) compared with that for control cases ($F=5.5999$, $P < 0.05$).

KEYWORDS: Rheumatoid arthritis (RA), HAase Enzyme.

1. INTRODUCTION

Rheumatoid arthritis (RA) is an autoimmune disease that causes chronic inflammation of the joints. Autoimmune diseases are illnesses that occur when the body's tissues are mistakenly attacked by their own immune system. HAase enzyme refers to a big analysed enzyme family. HAase has been identified and named in 1940.[1] Duran Reynals is the scientist who discovered this family in 1928. This enzyme type have unknown aspects, due to the difficulties in measuring their activities, also, it is so difficult to identifying and purifying these enzymes which present at low concentrations in tissues. These enzymes have unstable specific Activity as well.[1-5]

This enzymes family can be classified according to their natural sources and their functional into; Testicular type, Leech type and bacterial type. Moreover, HAase human plasma sounds to be one of the testicular sources[1] which has identification number (E.C.3.2.1.2.5).[9,10,40]

The root of enzymes are further can be classified according to their functions into two groups. The First group can self-analyse Hyaluronic acid (HA).[7]

While the second group can analyses other essential materials. The first group of these enzymes identified to work outside Invitro at a weak acidic environment such as HAase enzyme in lysosome and Sultry. The HAase enzyme second group which is Invitro too working in wide range of pH such as the testicular, bacterial and toxic of HAase enzyme.

This enzyme presenting in tissues of Mammals (spleen, Kidney and liver)[8], in testis Humanness testis[9-10], Skin[8-11], and Microbiology[5], and finally presenting in toxic glands of various fish[10], the yolk of frogs.[6]

As stated before, the HAase can spontaneously analyse the HA due to the Hyaluronic acid is it substrate. This acid has been discovered by the Karl Meyer scientist in 1938. Hyaluronic acid term indicates the transparency pulse the Hyaluronic acid via conducted several experiments for determining two elements on the glass solution for human eyes (Vitreous).

The former is a kind of Glycosaminoglycan (GAase) which contains Macopolysuccarides (Mps).[12] Additionally, it is a source of Synovial fluid (HA) for human and marine life.[20, 23]

It works on contrary of HAase enzyme in Arthritis diseases due to its function on HA. The main target of this study is to determine the HAase enzymatic efficacy in the treatment of Rheumatoid Arthritis (RA) patients and it relationship with their age.

2. MATERIALS AND EQUIPMENTS

In this study, Hyaluronic acid have been sent by California University and seems to be supplied from Pharmacia Company in the USA was used. Lab grade of potassium hydroxide, Hyaluronic acid and Heparin supplied by Sigma Aldrich Company in the UK were used. N-acetyl- glycol solution supplied by BDH Company in the Germany was used. Also, distilled water in the labs of Clinical biochemistry department was used in this work.

However, Incubator-memmert supplied by Memmer Company in Germany was used. Spectrophotometer (UV/210A) double-beam instrument type which supplied by Shimadz Company in Japan was utilized. Distilled water equipment produced ideally for analytical and life science applications and for basic laboratory was used. Centrifuge from Beckman Coulter Life Sciences supplied by Thermo Fisher Scientific Company in the UK was used as well.

1. Experimental works descriptions

30 Blood samples gathered from RA patients women at age range 20-5 years, also same blood samples number (30) from normal women gathered at age range 20-50 years. However, Alfred Linker methods have been followed in this study to determine the activity of HAase enzyme[6] at wavelength 560nm.[16] All experimental results and the standard deviations are presented in Table.1.

Table 1: Illastreates the experimental results of this study with standard deviations.

RA	B.T	No. of sample	HAase activity µmol NAG/min/l	± SD
		16	52.15	±16.31
	A.T	14	25.79	±6.89

- B.T: before treatment
- A.T: After treatment

3. RESULTS AND DISCUSSION

Accordion to the displayed results in Tbale.1, it is clear that some women diagnosed early surfacing from RA and some of them already diagnosed and continue getting treatment.

The results in this Table.1, exhibited a differences before and after the treatment for cases suffering from RA. It is find out that the level of HAase enzyme significantly increases for RA cases compared with that in normal cases) $P < 0.05$. Thus, the activity of HAase can be considered as a practical indicator to diagnose RA disease in human.

4. CONCLUSIONS AND RECOMMENDATIONS

From this study, the HAase enzyme can be used as practical indicate in diagnostic RA in human, due to it activity significantly increase, irrespective the age of patients suffering from RA ($f=2.194$, $P<0.05$).

It is recommended to extend this study via:

1. Specify more cases that the HAase being as indicator help to diagnose the patients cases.
2. Investigate the enzyme components and specify the active points that it has.
3. Investigate the effect of a new natural compounds on HAase activity, specially, in cases has moderate behaviour on enzyme to use it as medications compounds.

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