# The Effect of Lipid Polysaccharid on the Tissue Structure of the Intestine of White Mice against Infection with Amoebic Dysentery

Yathrib Mashaalaah hamed[1], Fouad S. I. Al-Rubaye[2]
1, 2Department of Biology, College of Education for Girls, University of Mosul, Mosul, Iraq
yathribmashaalaah03@gmail.com
falrubee@uomosul.edu.iq

## Abstract

Amoebic dysentery is aparasitic disease that affects human's snd its spread is very dangerous. Acompound of LPS extract was used from the wall of gram-negative bacteria in groups of mice. And then it was dosed with the amoebic dysentery as mice were dosed with three concentrations of 0,1 0,2 and 0,3 and the highest effect of the extract was at concentration 0,3 which achieved results of a decrease in the process of villi necrosis in the intestine compared to the control group . the control dosed with parasite the presence of large numbers of parasite in the intestine with goblet cell enlargement with lymphocytes and mucosal degeneration compared with groups treated with LPS extract concentrations 0,1 0,2 and 0,3 mm which showed the presence of little hyperplasia and little infiltration of inflammatory cells with respect to concentration 0,1 and composition normal for intestinal glands, lieberkin crypts and goblet cells at 0,2 concentration and no necrosis with normal composition of enterocytes and goblet cells similer to the negative control group untreated with the parasite .

Keywords: Amoebic dysentery, Layer Lipopolysaccharide,Parasitic disease

## 1. Introduction

Amoebic dysentery is adisease caused by atype of intestinal parasite that infects humans, atissue-reducing amoeba that causes inflammation of the colon and intestine poor countries cause contamination of water and food with waste containing bags [1].

The infection is transmitted by eating food contaminated with bags. In advanced fection, it is transmitted to the blood and to other organs such as the liver, lung and brain. Symptoms are in the form of stomach pain, abdominal muscle cramping, and diarrhea. Symptoms appear 3 days after infection. The parasite may cause health problems two to four weeks after infection. These problems include nausea, diarrhea, weight loss, fever, and may cause more serious infection [2].

Such as liver abscesses, and causes vomiting, pain in the upper abdomen, swelling of the liver and other complications such as megacolon in recent years, researchers have tended to modify the body,s immunity by using immune stimulating substances for the body using substances isolated from several microorganisms such as fungi and bacteria against some parasitic infection and they obtained positive results in this field [3] Gram-negative bacteria have strong outer membrane and an impermeable junction that makes them resistant to external conditions such as resistance to antibiotics and other factors [4] this layer was used as an active immunomodulatory at low concentrations of it and stimulated non-specialized immunity against pathogenic organisms [5] as this substance consists of chemical parts, namely: Fat A, which is the largest and main part in it, which gives the characteristic of permeability and is linked to pathogenicity and which thehost cells can recognize [6] .and it is composed of oligosaccharides. Bonded with sinter by-Kdo(3-deoxy-oct ulosonic acid).and Somatic antigen p-specific polysaccharide the antigen [7].

O layer stimulates the production of antibodies and because it is a long chain that has a role in making parts of the complement system that stimulates antibodies to collect on the surface of the bacterial cell [6] thus protecting bacteria from degradation As a result of the complement system and escape from phagocytosis [8] phagocytosis. The lipid layer A is resistant to antimicrobial peptides and antimicrobials [9].

While the core region works to confer staphylococcus bacteria to the outer membrane, OM. Whitfield et al. [6] As for LPS, which is naturally present in the bacteria that resides in the bacteria that bacteria that resides in the intestines, it stimulates autoimmune reaction when there is a defect in the permeability of the epithelial cells lining the intestines, which works on the access of LPS to the blood and stimulates the work of the immune system [10]. In the gut, the development of the immune system in infants [11].

## 2. Materials and Methods of Work

Preparation of asuspension of fatty polysaccharides 2 mg of fatty polysaccharides were taken and gradually diluted with 10 mm of BPs solution of phosphate, and the Vortex device was used for the purpose of mixing well. Then we made dilutions of the suspension by taking 1 mm of it and mixing it with 1 mm of buffer solution, and we have a storage solution that is kept in the refrigerator at a temperature of 7 degrees, and 1 mm of this solution was taken and the totals were dosed with different concentrations, including 0, 1-0, 2 and 0, 3 mm (10 micrograms, 20 and 30 micrograms).

### Perparation of the parasitic suspension

After investigating the presence of the parasite in the stool and after completing the diagnosis and confirming its presence in the stool sample, the parasite was isolated

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by taking 1 g of the sample and mixing it with three milliliters of physiological saline and placed in centrifugal tubes (with some modifications) and quickly sprouted 500 revolutions per minute for a period of three minutes, then filtered with gauze through four layers to get rid of the residues, then discarded again. And the sediment was neglected. The filtrate was taken and diluted with distilled water at a ratio of 1:10 .the suspension containing the bags was used in laboratory animal injection experiments. The suspension was kept at a temperature of 4C for 48 hours to be used again, then the number of bags was calculated with the concentrated sample using a blood cell counting slide [12].

### Confirm laboratory infection for mice

Mice were randomly divided into five groups (five mice for each group). The lipopolysaccharides were given in three concentrations of 0, 1-0, 2 and 0, 3 and the dose was repeated on the third day, then it was dosed on the fifth day with amoebic suspension prepared by mouth and containing 2x 104 cyst per ml. The dosa was given orally using an oral dosing syringe and entered into the esophagus and then the stomach and the fluid containing the bags was pushed directly into the stomach.

### Preparation of histological section

Histological sections were prepared and the slides were examined under a light microscope, and the histological changes of the large intestine were observed.

## 3. Results and Discussion

At the concentration 0, 1 we observed a slight hyperplasia of the goblet cells with a slight infiltration of mononuclear inflammatory cells (Figure 1)
Using hematoxylin and eosin stains with a magnification of 400x

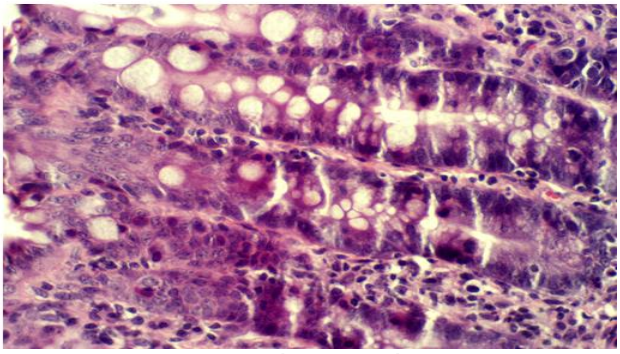

*Figure (1): slight infiltration of mononuclear inflammatory cells*

We also noticed a slight hyperplasia in the goblet cells with a slight infiltration of inflammatory cells because the inflammatory response that occurs as result of tissue decomposition and destruction occurs to protect the tissue because it is a physiological process and the complexity of the vascular system and immune system and the repair process Rapiar medianism cause scratching that occurs in the intestine as a result the presence of the parasite in it causes a hyperplasia of the goblet cells and stimulates the production of mucus . (figure2).

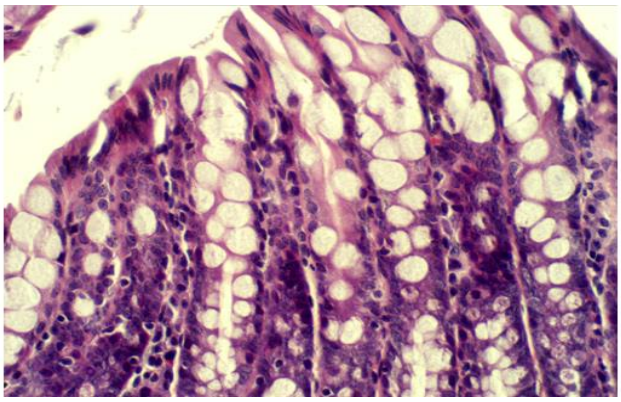

*Figure (2): the goblet cells and stimulates the production of mucus*

There is also a simple hyperplasia of the goblet cells with a dense infilteration of lymphocytes, (figure 3).

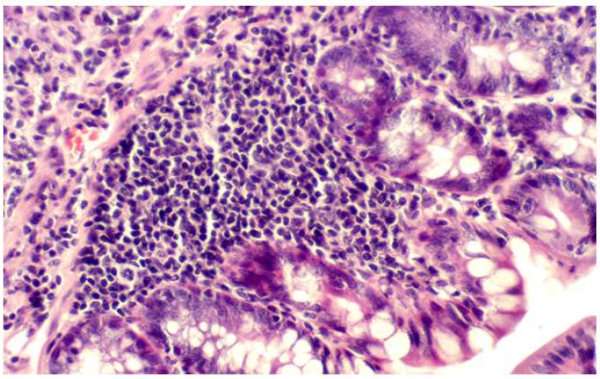

*Figure (3): simple hyperplasia of the goblet cells with a dense infilteration of lymphocytes*

As for the second concentration, which is 0, 2 the microscopic examination of the tissue taken from the large intestine showed that the intestinal glands, goblet cells, and crypts were normal in structure, but less than section treated with concentration 0, 3. (Figure 4)

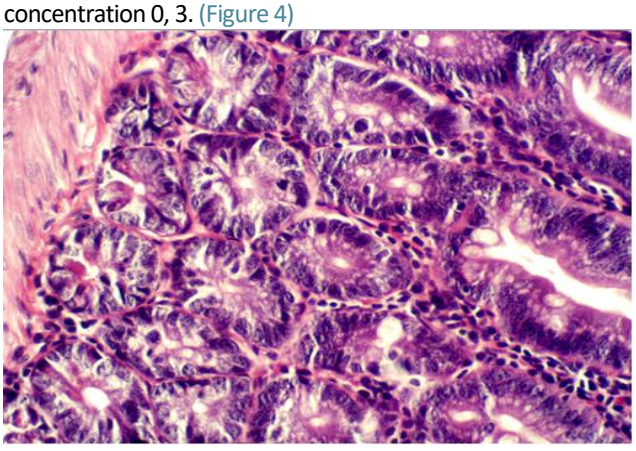

*Figure (4): hyperplasia of the goblet cells with a dense infilteration of lymphocytes*

We also observed a normal structure of the endothelial cells and the felt sheet (figure 5).

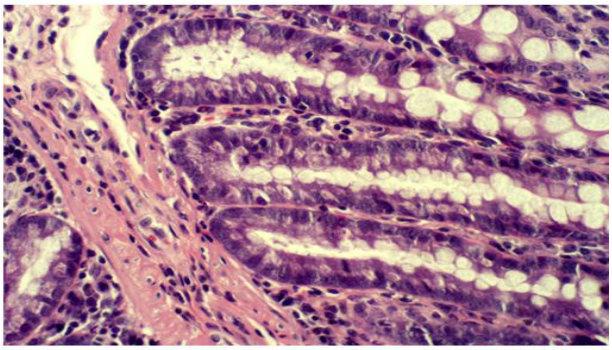

*Figure (5) normal structure of the endothelial cells and the felt*

As for the third concentration, which is 0, 3 the tissue sections taken from the large intestine showed the return of the mucous layer to its normal state, and the absence of the cystic and active phases, and a structure close to the normal structure of the intestine (figure 6).

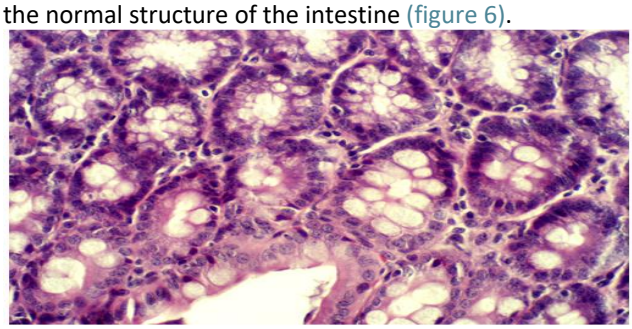

*Figure (6): structure close to the normal structure of the intestine*

We also observed the normal structure of the endothelial cells and the felt sheet (figure 7)

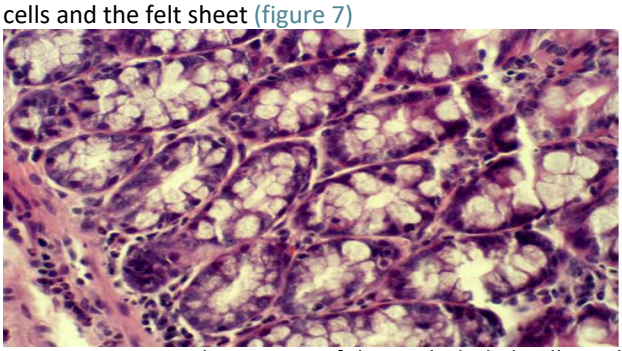

*Figure (7): normal structure of the endothelial cells and the felt sheet*

In the positive control group dosed with the parasite only, microscopic examination of the tissue sections of the large intestine showed the presence of the parasite in its active and cystic phases with necrosis of the mucous layer and infiltration of inflamatoru cells with the exit of the active phases as a result of the decomposition of the cysts. Oral laboratory test for parasite cysts, but it only occurs in humans, but it agrees with the findings of the two scientists [13, 14]. In the occurrence of adhesion of the active phases of the mucous layer of the intestine and its dissolution and penetration of its barriers (fig 8). Infiltration of phagocytic cells (fig 9). As well as mucosal degeneration and infiltration of lymphocytes (fig 10).

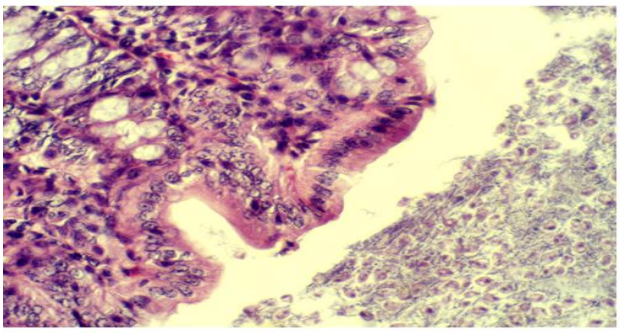

*Fig (8): dissolution and penetration of its barriers*

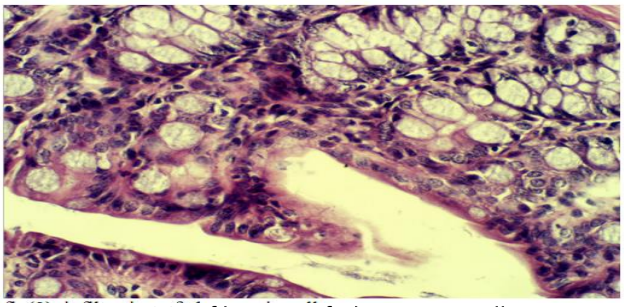

*Fig (9): infiltration of phagocytic cells*

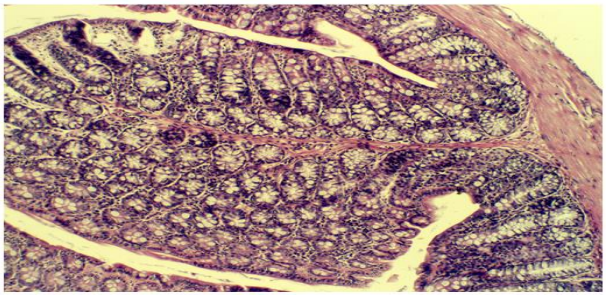

*Fig (10): mucosal degeneration and infiltration of lymphocytes*

In the normal condition, in the negative control group dosed with physiological solution, the pictures showed a normal presence of mucous cells and the histological structure of the intestine (figure 11) as well as a normal structure of the muscular layer and glandular structure of the intestine (figure 12)

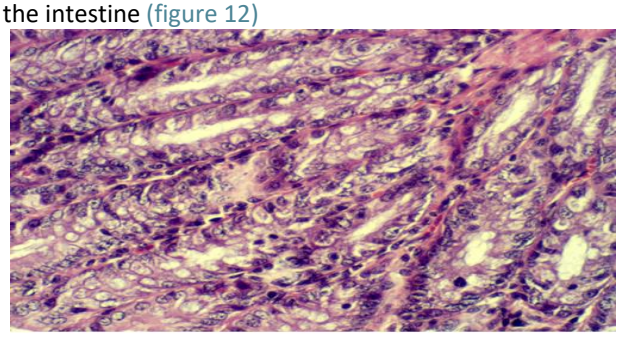

*Fig (11): the histological structure of the intestine*

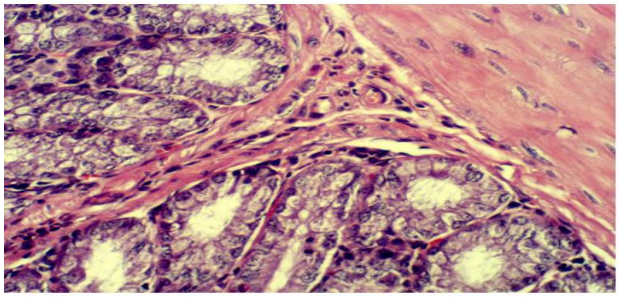

*Fig (12): glandular structure of the intestine*

It is clear from the previous results that each concentration of 0, 1 had an effect in reducing intestinal tissue injuries and necrosis, but less than the concentration of 0, 2 and 0, 3 which had a greater effect as the presence of cysts and trophozoites decreased in the intestine and the absence of necrosis in the epithelial layer of the intestine and its return to the normal state of the normal structure of the tissue.

The anti-layer effect of LPS using different concentrations is due to the fact that this layer is defensive in bacteria against external factors, pathogens and antibiotics, and when used in low concentrations and after preparing a suspension of it, it is used to stimulate the bodys immunity and control the infection of amoebic dysentery, and similar studies to this study were conducted in the city of mosul, the results of which agree with the current study, astudy conducted on the parasite Giardia, which showed great effectiveness in controlling the parasite and returning the normal shape of the intestine and a decrease in the number of cysts.

## 4. Conclusions

1-Amoebic dysentery is one of the parasites prevalent in Iraq and the city of mosul, infections with this parasite vary in age groups for both sexes.

2-Histological changes in the intestines such as necrosis and fibrosis of the intestinal mucosa after inoculating laboratory mice with the parasite.

3-The use of polysaccharide extract as an immunosuppressant reduced the lysis and necrosis of the intestine, villi and mucous layer of the intestine.

4-The use of low concentrations of polysaccharide extract has an effect on the infestation of amoebic dysentery and its control.

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