دراسة سريريه, مرضية ومناعية للأشيريشيا القولونية (O157:H7) المعزولة من الإنسان في الأرانب

رسالة مقدمة إلى مجلس كلية الطب البيطري – جامعة ديالى كجزء من متطلبات نيل درجة الماجستير

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بإشراف

الأستاذ المساعد الدكتور	
خالد محمود حمادي	

الأستاذ	الأستاذ
احمد جاسم محمد	

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Escherichia coli is a gram negative bacterium that is notable for the frequency and severity of infections that it causes for hospitalized patients. *Escherichia coli* is an important zoonotic agents transmitted from horses to humans especially veterinarian and persons who live with these animals in the same place(Dolejska *et al*., 2011).

E. coli is also regarded as a normal bowel flora that is commonly found in the lower intestine of warm-blooded organisms including humans and it can be pathogenic both within and outside of the gastrointestinal tract (Singleton, 1999 ; Harvey *et al*., 2013).

Bonardi *et al*.(2015) and Katani *et al* . (2015) reported that the Shiga toxin-producing *E. coli* O157:H7 is a cause of foodborne infections and ruminants were regarded as the natural reservoir for these toxins producing *E. coli* (STEC) especially sero groups O157.

Enterohemorrhagic *E. coli* (EHEC) is the main cause of the recent outbreaks of diarrhea, hemolytic-uremic syndrome (HUS) and hemorrhagic colitis worldwide (Kwon and Cho, 2015).

E. coli O157:H7 serotype is worldwide zoonosis and major foodborne pathogens responsible for the majority of severe cases of human EHEC infection (Lime *et al*., 2010 ; Dulo, 2014). It is one of the most important pathogens that produces verotoxin and has been traditionally associated with foodborne infection from consumption of foods of animal origin, particularly those originating from cattle, such as ground beef and burgers (Maktabi, 2016).

Entero hemorrhagic *Escherichia.coli* (EHEC) O157:H7 is an emerging pathogen that causes acute human gastroenteritis, bloody diarrhea, hemorrhagic colitis and hemolytic uremic syndrome, (Rabinovitz, *et. al*., 2012; Nguyen and Sperandio, 2012).

The main reservoir for this bacteria is bovine bowels, and infection mainly occurs after ingestion of contaminated water and food (Regua-Mangia *et al.*, 2012)**.**

Shiga toxin-producing *E.* coli O157:H7 cause food-borne illness that may be fatal. STEC strains enumerate two types of potent Shiga toxins (Stx1 and Stx2) that are responsible for causing diseases(Wang *et al.*, 2016).

E. coli O157:H7 is a potentially lethal pathogen which has been responsible for several outbreaks of milk-borne illness in recent years (Alhelfi *et al.,* 2012).

E. coli O157:H7 can be found in the feces and on the hides of meat animals, Approximately 75% of *E. coli* O157:H7 outbreaks in humans were linked to bovine-derived products, When hides were removed during the harvest process, the carcass and subsequent meat products became contaminated (Yilmaz *et al.,* 2006 ; Bosilevac *et al.*, 2015).

The most important methods for diagnosis depend on using Sorbitol MacConkey (CT-SMAC) agar and chrom agar which had been used for detection of *E. coli* O157:H7 (Khanjar and Alwan, 2014). And the latex agglutination test can also be used for identification and conformation of O157:H7 antigens (Yousif and Al-Taee, 2014).

Escherichia coli O157:H7 is one of hundreds types of the *E. coli* bacterium. Most types of *E. coli* are harmless and live naturally in the intestines of healthy humans and animals (WHO 2010).

Transmission to people occurs primarily via ingestion of inadequately processed contaminated food or water and less frequently through contact with manure of animals, or infected people (Ferens and Hovde, 2011).

However, *E. coli* O157:H7 produces a powerful toxin that can cause severe illness in humans (Ertas *et al*., 2013).

A study of Garcia *et al*., (2002) on naturally infected white rabbit by EHEC was performed to demonstrate the pathogenicity, they found the presence of erosive and necrotizing enterocolitis with adherent bacterial rods, proliferative glomerulonephritis, tubular necrosis and fibrin thrombi within small vessels and capillaries also they found that there was increase in creatinine and BUN levels which give indication for kidney damage.

The present study aims to:

1- Isolation and identification of *E. Coli* (O157:H7).

2- To estimate infective dose (ID) of *E. Coli* (O157:H7) in Rabbits.

3- To observe the clinical signs and postmortem changes (gross lesion and histopathological effects in different organs post infection.

4- Pursuit the bacterial spreading in the internal organs of Rabbits in different periods of the experiment.

5- To determine the status of the cellular immune response of the

6- infected Rabbits.