Effect of *Urtica Dioica* on bacterial translocation in mechanic icter model

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Sepsis and renal, hepatic and multi organ failure syndrome, due to bacterial translocation, if the operations were carried out for mechanic icter, still cause high morbidity and mortality.[1] It is known that obstructions of the extra hepatic bile ducts increase the translocation of bacteria in the gastrointestinal system. It was reported that bacterial translocation causes sepsis and multiple organ failure syndrome.[2] *Urtica Dioica* (UD) is a perennial plant with stinging hairs belonging to the plant family *Urticaceae* with a height of 30-100 cm. It is endemic in many parts of Turkey, and seeds have been widely used in folk medicine, particularly in advanced cancer patients, for a long time.[3] In some studies, an anti proliferative effect in prostate cancer, an anti inflammatory effect in chronic inflammatory events such as rheumatoid arthritis, a mitogenic effect on the T lymphocytes, and an antidiuretic and hypotensive effect has been reported.[4] It was also reported that UD prevents the toxic effect of carbon tetrachloride on the liver.[3] The aim of the present study was to investigate the efficiency of UD on bacterial translocation in an experimental model.

This investigation conformed to the 'Guide for the Care and Use of Laboratory Animals' published by the United States National Institutes of Health (NIH publication No; 86-23, revised 1985). The seeds were prepared by processing in a pharmacology laboratory. The peels of the seeds (200 mg) were broken into pieces by electric blender. Thereafter, 500 ml of ether (sigma), previously purified from peroxide, was poured over the particulated seeds and left for an hour. During the next stage, the ether was decomposed by aspiration. A pose and oil mixture, which was the residue after aspiration, was filtered through glass cotton. The oil obtained from the filtering process was poured into a Schilder box. The oil obtained from the process was 18% of the total seeds. The Schilder box was stored in a dark room at +4°C by filling with nitrogen. In the experiment, 45 male rats, with a weight of 230-300 gram from the Wistar-Albino families, were used. The rats were arranged into 3 groups. The first group was sham (n=15), choledochal ligation (CL) was carried out in the second group (n=15), and in the last group (n=15) the CL was carried out and UD was applied. The rats were fed with standard laboratory feed and tap water at room temperature. All the groups were anesthetized with ether after being left hungry 12 hours before the operation. After shaving the abdominal skin, the rats were cleaned with antiseptic solution. The abdomen was opened by median incision and closed after laparotomy in group I. The choledochus was ligated in groups II and group III. The rats were observed for 3 days after CL. Over the following days, the UD extract (l mg/kg/day, subcutaneous) was injected into group III for 10 days. The liver, spleen, lymph node cultures, peritoneal swab, and blood culture were taken under aseptic conditions by re laparotomy for all groups on the 14th day after the first operation. The cultures were examined at the microbiology laboratory. The blood and peritoneal cultures, which were taken under aseptic conditions, were inoculated into 5% sheep blood agar and eosin methylene blue (EMB) agar. The samples taken from liver, spleen and lymph nodes were scaled with 0.1 mg sensitively. The samples were homogenized by sterile saline. The blood and peritoneal swab samples were evaluated for bacterial growth. The growth in liver, spleen, and lymph node cultures were quantitatively evaluated by considering dilution factor in terms of cfu/gr/tissue (Log_{10}). All isolates obtained on the subculture plates were identified by conventional microbiological procedures. Gram positive coccus was identified according to colony morphology on blood agar, catalase and coagulase tests, effect of the gram positive cocci to mannitol and trehalose in the medium. Gram negative bacilli were identified with api 20 E (bioMe'rieux). In the present study, only total bacterial growth was evaluated. For statistical analysis, Student's T- test and Mann Whitney-U test were used. The differences among the groups significant if $p<0.05$.

The growth rates in the samples obtained from the experimental groups are summarized in **Table 1**. There was no growth in the blood samples of the sham group, whereas it was observed in group II and III. However, the growth rate in group III was less than in group II. These differences were statistically significant. Despite the highest growth rate in the peritoneal samples obtained from group II, it was equally observed in group I and III. However, the growth rates in group I and III were significantly lower than group II. For the liver cultures, the significant differences were seen in group I when compared to group II and III. The quantitative growth rate in group

Table 1 - Growth rates in the samples obtained from the experimental groups.

Group	Number of samples obtained (%)				
	Blood	Peritoneum	Liver	Spleen	Lymph node
Group-I (SHAM)	0 (0)	5 (33.3)	0 (0)	0 (0)	10 (66.6)
Group II (CL)	13 (86.6)	14 (93.3)	13 (86.6)	12 (80)	14 (93.3)
Group-III CLUD)	3 (20)	5 (33.3)	11 (73.3)	8 (53.3)	11 (73.3)
P-value	0.0009	0.002	0.648	0.245	0.327

CL - Choledochal ligation, CLUD - Choledochal ligation + Urtica Dioica

III, receiving UD, was significantly lower than group II for liver, spleen and lymph node culture.

In an experimental study, it has been shown that bacterial translocation is initiated by inflammatory stress due to obstruction and distention of the gut, and later continuation of translocation depends on ischemia caused by free oxygen radicals.[5,6] Urtica Dioica stimulates specific T helper and T cytotoxic lymphocyte populations associated with cytokine production In addition, it contains a growth factor for the gut system.[5] The UD extract has also been reported to reduce TNF-alpha and IL-l beta levels, and may be therapeutic in rheumatic diseases.[3] It has been reported that bacterial translocation causes immune system deficiency.[3] Another study has showed that UD activates the immune system.[1] It is shown that UD inhibits cyclooxygenase activation and consequently avoids development of free oxygen radicals and is used for the treatment of chronic inflammatory diseases such as rheumatoid arthritis.[1]

In conclusion, it is shown that UD has prevented the bacterial translocation on the mechanical icter model. It can decrease morbidity and mortality due to sepsis and multiple organ failure.

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