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**INHIBITORY EFFECTS OF CINNAMON EXTRACT ON GELOPHEN -INDUCED
NEPHROTOXICITY IN ADULT RAT**

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ABSTRACT

Gelophen (Ibuprofen) is a nonsteroidal anti-inflammatory medication of drugs that are useful for relieving moderate to severe pain. However, this drug has proven effects such as the production of free radicals and interfering with cellular events. Thus, by suitable antioxidants to reduce the effects of this medication seem necessary. Antioxidant effects of a cinnamon extract on the inhibition induced nephrotoxicity Gelophen are investigated.

49 Wistar rats were randomly divided into 7 groups. Group C was given no medication. S group, the saline solution was injected intraperitoneally. Group G400 gelophen 400mg per kg body weight (400mg/kg B.W), Group Ci50 and Ci200 cinnamon extract (50 and 200mg/kg B.W), Groups GCi50 and GCi200 order gelophen with the dosages of 50 and 200 mg per kg body weight of ethanol extracts of cinnamon in the injections. During the experimental period was 28 days. Later samples were taken at the end of day 28, rats were killed and serum urea nitrogen, uric acid and creatinine levels were measured.

Concentrations of blood urea nitrogen, uric acid and creatinine in the G400 renal damage was significantly higher than in groups C and S ($P < 0.05$). Ci200 and Ci50 groups had no significant changes. There was a significant decrease in GCi50 and GCi200 groups than G400. Cinnamon extract has antioxidant properties and is thus less gelophen induced nephrotoxicity.

Keywords: Cinnamon, Gelophen, Nephrotoxicity, Rats

INTRODUCTION

All drugs have some side works complications are unwanted and uncontrollable. While herbal medicines are virtually free of side effects [1]. Cinnamon is a common name and scientific name *Cinnamomum Zeylanicum* Nees is a plant which is aromatic and pleasant in terms of chemical composition of volatile oils, Cinnamon aldehydes, terpenes, synamyl alcohol, limonene, safrole and flandrena. This plant has therapeutic effects of anti-spasmodic, carminative, anti-diarrhea, anti-bacterial, anti-parasite and cooling. Also for the treatment of anorexia, intestinal colic, infant diarrhea, colds, flu and is particularly useful for colic and flatulence associated with digestive disorders with nausea [2]. Cinnamon is an evergreen tree of the laurel family (*Lauraceae*) from all parts of the Sniff would smell fragrant cinnamon. This tree grows in Ceylon and India. The dried bark of the cinnamon tree is used for therapeutic purposes. Skin plant has a 0.5 to 2.5 percent of the oil that makes up a huge bulk of the aldehyde, Eugenol trans sinamic acid as well as other compounds such as hydroxy phenyl Propany huge aldehyde, orthomtoxy Synam aldehyde, Synamyl alcohol and its acetate and terpene compounds found in essential oils. Cinnamon is the bark of plant tannins,

mucilage, and oligomery prosianidin and minor amounts of coumarin. Synam Aldehyde in low-dose had stimulates effect the central nervous system and in high-dose has soothing effect. Another huge effect Aldehyde include antipyretic, antibacterial and antifungal activities, accelerating the release of catecholamines from the adrenal gland in the center, papaverine-like effect on the poor, increased peripheral blood flow, hypotension, bradycardia and increased blood sugar [3]. Ibuprofen as a non-steroidal anti-inflammatory drug with the effects of pain, fever and inflammation treatment for rheumatoid arthritis and related conditions by Boots UK in 1969 and Upjohn Company of America in 1974 and was introduced to the pharmaceutical market. The effectiveness of the drug has been approved by the FDA in rheumatoid arthritis and osteoarthritis [4]. It is practically insoluble in water [5]. The reviews found that ibuprofen inhibits the formation of prostaglandins and endo-peroxide and the system will affect histamine and quinine [6]. Also indicated that more rate reductions gelophen glomery filtration and renal plasma than is acetaminophen [7]. Thus, the possible effects on different body tissues, especially the kidneys gelophen study to identify

suitable antioxidants to reduce gelophen effects on renal function.

METHODOLOGY

This study has been carried out experimentally and completely random. All animal experiments in this study comply with the Code of Conduct has been developed. 49 adult Wistar rats weighing 200 ± 10 g and 75 days were produced in Razi Vaccine and Serum Research Center, Shiraz. Rats were in Islamic Azad University of Jahrom Branch for 28 days under laboratory conditions include a temperature of 22 ± 2 ° C and 12 h light and 12 h dark cycle. Rats were kept in a cage; steel mesh door and a standard rodent diet (pellete) were used, as well as water bottles that were provided for. Their food and water were free. Their cages were disinfected with 70% alcohol 3 times a week. Gelophen preparation method is to buy the drug from the pharmaceutical company Dana as 400 mg capsule and using saline solution, was prepared dose of 400mg per kg body weight in rats. Using saline solution, dosage of 400mg per kg of body weight in rats was prepared. For preparation cinnamon extract, 1 kg cinnamon sticks were purchased from the market and then milled and the powder was thoroughly. Soxhlet extraction was used for the procedure.

In this way, for every 10 grams of cinnamon powder, 200 ml of the solvent containing ethanol and water is added to it, and was cast in a Soxhlet apparatus. The solvent was removed from the extract with the help of rotavapor device. Samples (extracts, gelophen and saline solution) in a volume of 0.2ml insulin syringe were injected intraperitoneally every day at 9 am.

49 rats were divided randomly into 7 groups as follows:

Group C: were maintained on normal without any medication.

Group S: received saline solution as solvent.

Group G400: Gelophen 400mg/kg B.W received.

Group Ci50: Cinnamon extract 50mg/kg B.W received.

Group Ci200: Cinnamon extract 200mg/kg B.W received.

Group GCi50: Gelophen 400mg/kg B.W with cinnamon extract 50mg/kg B.W received.

Group GCi200: Gelophen 400mg/kg B.W with cinnamon extract 200mg/kg B.W received.

After 28 day period, all groups of rats were measured by the effect of anesthetic and blood samples were taken from the heart by syringe 5 ml. After separation, serum concentrations of urea nitrogen, uric acid and

creatinine were measured in serum. To express the results, compare the amount and distribution of column charts are used to express the values are given as Mean \pm SD. One-way ANOVA for comparison between treatments One way analysis of variance (ANOVA) followed by Turkey, s post hoc test for multiple comparisons between groups were used. Values of $P < 0.05$ was considered statistically significant. All statistical tests to analyze the data and SPSS software version 18.0 were used.

RESULTS

As shown in **Figure 1**, G400 group due to kidney damage, blood urea nitrogen level is significantly higher than group C ($P < 0.05$). In Ci200 and Ci50 groups had no significant changes compared to controls. GCi200 and GCi50 groups compared to the G400 is a significant reduction ($P < 0.05$).

As shown in **Figure 2**, G400 group due to kidney damage, uric acid is significantly higher than group C ($P < 0.05$). In Ci200 and Ci50 groups had no significant changes compared to C group. In GCi200 and GCi50 groups compared to the G400 is not a significant reduction ($P < 0.05$). In GCi200 and GCi50 groups due to renal damage was significantly higher than group C ($P < 0.05$).

As shown in **Figure 3**, G400 group due to renal damage, creatinine levels are significantly higher than group C ($P < 0.05$). In Ci200 and Ci50 groups had no significant changes compared to controls. In GCi50 group compared to the G400 is not a significant reduction ($P < 0.05$). GCi200 is significantly reduced in comparison with G400 ($P < 0.05$).

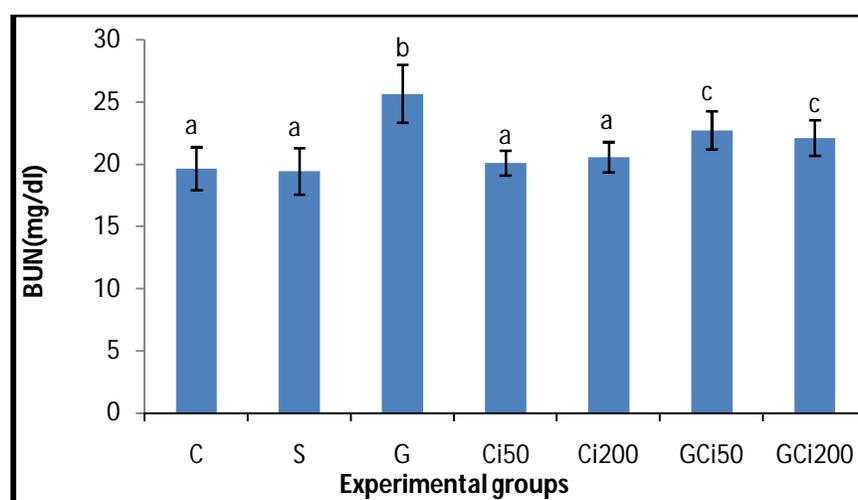


Figure 1: Effect of Cinnamon Extract and Gelophen on BUN. The Culmmnes that Have at Least One Common Letter, Have not Significant Different From Each Other at the Level of $P < 0.05$

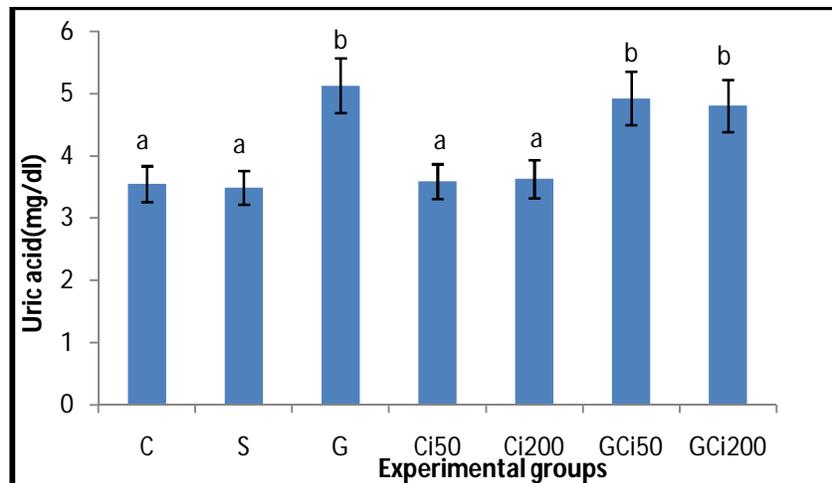


Figure 2: Effect of Cinnamon Extract and Gelophen on Uric acid. The Culmnes that Have at Least One Common Letter, Have Not Significant Different from Each Other at the Level of $P < 0.05$

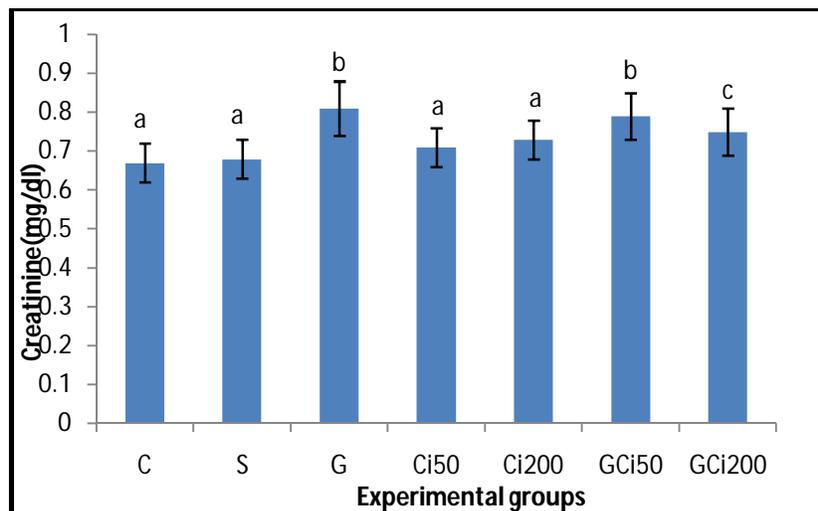


Figure 3: Effect of Cinnamon Extract and Gelophen on Creatinine. The Culmnes that Have at Least One Common Letter, Have Not Significant Different From Each Other at the Level of $P < 0.05$

DISCUSSION

The above results indicate that cause damage to the kidneys gelophen the accumulation of urea, uric acid and creatinine levels in the blood. If these factors can be seen in the groups receiving gelophen increase. The investigation found that the most common adverse gelophen renal excretion and

intestinal damage, such as nausea, diarrhea and bleeding. Other side effects include renal, hematologic, liver and nerve [9]. The effect of acetaminophen on renal function during stress and exercise Gelophen stated that further reduces the amount of gelophen glomery filtration and renal plasma than is acetaminophen [7]. It also stated that the

effect of steroid drugs on renal function is different, but mostly through the inhibition of cyclooxygenase activity and hemodynamic changes caused adverse effects are related to glomery filtration [10]. This is consistent with current research. The research stated that when renal function is reduced, for example in cases where the body is one renal creatinine level increases [11]. Regulate the metabolism of urea by the kidney is a vital part of or constitute human metabolism [11]. Uric acid by the kidneys and excreted in the feces it is a little. It increases the amount of blood in renal failure [11]. In the present study, increased BUN, uric acid and creatinine in group G400 is indicative of damage to the kidneys. In GCi50 and GCi200 groups that recived gelophen and cinnamon extract at the same time is also relative to the G400 group received only changes gelophen BUN, creatinine, uric acid, and is even more. This can be because it is a rich source of antioxidant compounds are plants such as cinnamon [12]. Cinnamon is one of the most important antioxidant compounds eugenol, camffeine, huge coumarin aldehyde and acid Sinamic noted, these compounds prevent oxidative reactions by making oil and cinnamon extract are extracted from plants [13, 14]. In other studies it can be stated that high levels of phenolic compounds and the

inhibitory effect of free radicals, leaves, fruit and cinnamon oils have reported and the inhibitory activity of free radicals in the phenolic ring of cinnamon compared to Eugenol [15]. However, the MHCP Cinnamon extract prevents the formation of free radicals. Hence, cinnamon may also be able to reduce this through the development of various complications affecting the kidneys is consistent with current research.

CONCLUSIONS

With attention to entries been listed been identified which gelophen via inhibiting cyclooxygenase activity and also homodynamic changes relating to the filtra glomery causing mal effects dates back also gelophen causes release species free-Oxygen and changes blood urea nitrogen, uric acid and creatinine dates back and Cinnamon with the effects of antioxidants in their reduced ore.

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