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Diuretic Effect of Hydro Alcoholic Extract of Matricaria Chamomilla and its Phytochemical Studies

R.Suresh[1], Saheedha.P[1], R.Sivasakthi[1]

1. RVS College of Pharmaceutical Sciences,

The TN. Dr.MGR Medical University, Chennai-32

Corresponding Author: Dr.R.Sivasakthi.
Professor, Department of Pharmacy Practice, Karpagam College of Pharmacy, Coimbatore.

Abstract

Introduction: Diuretics can alleviate a number of pathological conditions, including elevated blood pressure, decreased fluid retention, edema, swollen ankles, and discomfort. Information regarding the characteristics and applications of medicinal plants is highly sought after due to the global trend toward the usage of natural plant treatments. **Aim:**For the aforementioned reasons, the present investigation's objective is to assess the diuretic efficiency of the hydroalcoholic extract of*Mticaria Chamomilla*. **Methodology:** Five grams of the dried plant were roughly ground up and extracted using ethanol and water. After filtering, each aqueous extract was put to use. Histopathology and Diuretic activity are studied for the hydro-ethanolic extract of *Matricaria chamomilla* leaves. **Result:** When compared to zero days, the aforementioned particulars—likecreatinine, urea, and glucose—don't alter during the seven-day treatment. Comparing the 15th day to the zero days, smaller biochemical alterations were seen. Urine volume increased in response to the *Matricaria chamomilla* hydroalcoholic extract as well. At 200 mg/kg and 400 mg/kg body weight, the increment was 18% ($p < 0.01$) and 41% ($P < 0.001$), accordingly, in contrast with thegroup under control. **Conclusion:** By using ion-selective channel blocking to measure the ions and electrolytes evacuated by the animals, this current investigation will be very helpful in determining the diuretic effect of the *Matricaria chamomilla* leaf extract.
Keywords: Diuretics, *Matricaria chamomilla,* hydro-ethanolic extract,

Introduction:

Due to their effectiveness, affordability, and safety, herbal medications have become more significant and well-liked in recent years. [1]. In certain situations, the relationships that medicinal plants have with other plants in their environment affect those plants' ability to heal. Renal hemodynamic activation may be indirectly changed by diuretics. They facilitate the body's removal of surplus fluid, or edema, which builds up within the tissues as a consequence of many medical disorders. The main source of diuretics is medicinal plants. Herbal remedies, both single and multiple, have been employed as diureticsThere are supposedly around 650 mono- and poly-herbal formulations in therapeutic use that come in the shape of tablets,

capsules, tinctures, and decoctions from over 75 different plants.One of the characteristics of the mango species Mangifera indica, which belongs to the Anacardiaceae family, is hypertension.6–8. The lovely annual Matricaria chamomilla boasts fragrant, cheerful white daisy blossoms. In temperate Asia and throughout Europe, M.chamomilla is found in close proximity to populated areas. Numerous plant extracts employed as diuretic medicines in ethnomedicine have demonstrated diuretic efficacy in experimental animals. Nevertheless, there is a dearth of evidence to support Matricaria chamomilla's usage as a diuretic agent, even though it is widely used in traditional medicine. According to estimates from the World Health Organization, more than 75% of people worldwide still get their basic medical requirements from traditional healers using plant-derived remedies.

Aim:

The present investigation'sobjective is to assess the diuretic efficiency of the hydroalcoholic extract of*Mticaria Chamomilla*.

Methodology:

Using a cylindrical crusher, roughly 5 grams of dried plant material was coarsely crushed into bits that ranged in size from 2 to 5 mm. The material was then extracted using ethanol and water, respectively. Every infusion was made by combining five grams of herbal dry tea with 200 mls of distilled H_2O, or one tea cup, and letting it steep for 10 minutes at a temperature of roughly 100ºC +/- 1ºC. Each aqueous extract was placed in glass flasks with a plastic screw lid and chilled after passing through a paper filter. Numerous authors have identified in this investigation, the utilization of infusion time & solvent starting temperature as effective parameters for the extraction of phytochemical components, including flavonoids and phenolic compounds, from herbs. The histopathology and Diuretic activity are studied for a hydro-ethanolic extract of *Matricaria chamomilla* leaves.

Plant Profile:

M.chamomilla is commonly introduced to temperate North America and is found in close proximity to populated regions throughout Europe and temperate Asia. Up to 4.8 acidity levels in the soil are easily reached by it for growth. The ideal temperature range for successful seed germination is 10°C to 20°C. It was discovered that October 10–18 was the best period to transplant the crop in order to produce larger yields.

Figure 1: Whole plant of *Matricaria chamomilla*

Result:

Acute toxicity and Haematological

According to the study, after 15 days, the following parameters were found to be normal: RBC, hemoglobin, hematocrit, eosinophils, lymphocytes, platelets, neutrophils, monocytes, MCV, WBC, MCH, & MCHC. When compared to zero days, the aforementioned metrics remain unchanged during the seven-day treatment. Comparing the 15th to the zero-day, milder changes were seen. A comparison with the control group revealed that the various days. Figure 2.

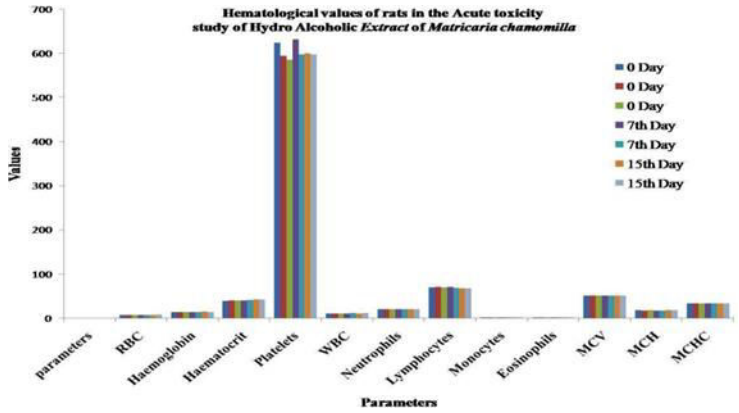

Figure 2: Hematologicalvaluesof ratsin theAcutetoxicitystudyofHydroAlcoholic*Extract*of *Matricariachamomilla*

Biochemical Values:

The findings of biochemical examination showed that the parameters shown in Table (ASAT (U/I), ALAT (U/I), Urea (mg/l), Creatinine (mg/l), and Glucose (g/l)) were all typical for the following day medicine was taken. When compared to zero days, the aforementioned factors—likeurea, creatinine&glucose—don't alter during the seven-day treatment. Comparing the 15th day to the zero days, smaller biochemical alterations were seen. The comparison of the control group showed that the various time intervals of 0, 7, and 15 days above the criteria are comparable in terms of the drug's indication that no adverse effect was created. ASAT (U/I) & ALAT (U/I) amounts were somewhat elevated following the medication treatment in contrast to the group undercontrol, suggesting the extract had antioxidant "properties.

Table 1: Biochemical values of rats in the chronic toxicity study of Hydro Alcoholic Extract of *Matricaria chamomilla*

Treatment schedule							
	0 Day		7th Day			15th Day	
Parameters	Normal	300mg/kg	300mg/kg	300mg/kg	300mg/kg	300mg/kg	300mg/kg
ASAT(U/I)	84 ± 2.1	85 ±1.9	83 ±1.7	83± 2.0	85 ± 2.1	84 ± 1.9	85 ± 2.3
ALAT(U/I)	65.8 ± 4.3	61.3 ± 4.6	65.6 ±3.6	64.5± 4.1	65.1 ± 4.1	66.5 ± 4.1	64.8 ± 3.2
Urea(mg/l)	0.26 ± 0.05	0.26 ± 0.06	0.28 ± 0.03	0.25±0.09	0.26 ± 0.07	0.34 ± 0.04	0.35 ± 0.06
Creatinine (mg/l)	5 ±0.63	4.73 ± 0.42	4.96± 0.27	5.03 ± 0.28	5.11 ± 0.20	4.88± 0.49	4.92± 0.17
Glucos"e (g/l)	1.52 ± 0.12	1.02 ± 0.08	1.15 ± 0.11	1.08 ± 0.4	1.11 ± 0.39	1.07 ± 0.45	1.12 ± 0.35

Histopathology:
The study on the histology of various organs showed that at dosage ranges between 2000 - 300 mg per kg, there were no cellular alterations seen in the kidney, liver, stomach, heart, spleen, or lungs. Histopathology study of kidney results expressed that Figure 3

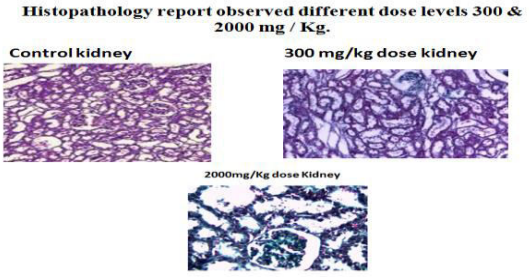

Figure 3: Histopathology report observed different dose levels of 300 & 2000mg/kg

Mortality:
The indication to founded cookies' LD50 value of 2000 mgram per kilogram for the 1 in 10th (200 mgram per kgram), one in 5th (100 mg per kg), and one in 5th (400 mg per kg) dosage resulted in a 15-day observation period with a mortality rate of zero (Alive percentage -100). These dosages might be applied to particular animal models, like diabetic animals and investigations on bioavailability.

Diuretics action:
The outcomes of the assessments made of the extracts are enumerated. Urine volume (ml per 100g/8h) and electrolyte (Na+ & K+) content (mequiv per 100g/8h) of the animals' urine are shown in Table 2. Table 1 shows a 54% increase in urine volume with the reference diuretic, HCTZ. Urine volume increased in response to the *Matricaria chamomilla* hydroalcoholic extract as well. At 200 mgram per kgram& 400 mgram per kilogram weight ofthe body, the Hydro Alcoholic Extract of *Matricaria chamomilla* showed an increase of 18percent ($p < 0.01$) & 41percent ($P < 0.001$), accordingly, in contrast to the group under "control.

Table 2: Diuretic effect of Hydro Alcoholic Extract of Matricaria chamomilla Lipschiz Test Method

S.No	Groups	Total urine Vol(mg/kg BW/5 hrs)	Na+ mmol/L	K+ mmol/L	Cl- mmol/L
1	Control(10ml/kg BW)	13.22±0.32	107.42±0.75	48.00±0.32	76.99±0.23**
2	Standard(Frusemide 10 mg/kg BW)	21.00±0.03	189.01±0.64	82.03±0.44	128.07±0.24**
3	HA EMC (200 mg/kg BW)	16.41±0.66	165.03±0.63	73.38±0.43	100.46±0.42**
4	HA EMC (400 mg/kg BW)	19.45±0.41	178.93±0.73	81.32±0.35	113.06±0.06**

Statistical analysis was done by using the Lipschiz Test Method. P≤0.01* P≤0.001* Significant difference from control. HA EMC: Hydro Alcoholic Extract of *Matricaria chamomilla*

One" medicinal plant—the *Matricaria Chamomilla'*shydroalcoholic extract —is the subject of the current study. The herb's diuretic activity possesses some positive effects on the animal models that are chosen for

study, and the herb may be chosen for additional molecular-level research. Before using the plant in human volunteers, invivo & invitro prototypes are required to obtain all of the drug's details. Using the study results obtained, Studies on acute toxicity will be carried out for *Matricaria chamomilla* species,which might not have demonstrated any toxicity that the human body could exhibit.

Conclusion:

This current experiment will be very helpful in measuring the electrolytes&ions expelled by animal models utilizing selective ion channel blocking, which will help figure out the diuretic impact of the Matricaria chamomilla leaves extract.

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