

DIURETIC ACTIVITY OF A SIDDHA DRUG: PUNARNAVASAVAM**R.Valarmathi, S. Akilandeswari*, M. Sivagamy and VN. Indulatha**

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ABSTRACT

The effectiveness of a polyherbal formulation PUNARNAVASAVAM (PVM) prepared from 21 herbs viz Chukku, Kurumulaku, Thippali, Nellika, Maramanjil, Aamankkiver, ect. The preliminary phytochemical screening of the polyherbal formulation (PVM) shows the presence of alkaloids, flavonoids, glycosides, saponins and phytosterols, which are responsible for various pharmacological activities. For the evaluation of the formulations Lipschitz et al method was employed. The flavonoids present in this formulation is confirmed as quercetin by preparative PV with UV spectral studies. The data proved that PVM has considerable diuretic effect as compared to the standard ($P < 0.01$).

INTRODUCTION

Medicinal plants are extensively used as a major source of drugs for the treatment of various ailments.¹⁻³ Since the time of early Neanderthal man, plants have been used for healing purposes. Even as modes of medicines changed throughout the countries, plants continued to the mainstay of a country as well as method and ideas on plant healing were passed down from family and within communities.

Plants based drugs and formulations are in use since ancient times. However, very little work has been reported on the pharmacological evaluation of the classical formulations for the activities claimed in traditional medicine. This study was an effort to evaluate the traditional claims of an ayurvedic formulation, punarnavasavam (Astanga Ayurveda Sala, Trichy).

Many polyherbal formulations are being prescribed for diuretic conditions.⁴⁻¹⁰ Although these preparations have been claimed to have diuretic activity of some of the individual ingredients of the formulations has not been experimentally evaluated. We have evaluated the diuretic activity of one of the important polyherbal ayurvedic formulations like Punarnavasavam in male albino rats by the method Lipschitz et al.¹¹⁻¹³

Punarnavasavam (PVM) is a classical polyherbal formulation consisting of 21 ingredients of plant origin (Table 1). Literative scanning showed that the pharmacological activity of these formulations has not been reported elsewhere. PVM used in the present study were prepared by an ayurvedic practitioner specialized in the preparation of

classical formulations and are labeled as Prepared Samples (PS).

Present study deals with preliminary phytochemical analysis for the presence of different chemical groups such as alkaloids, flavonoids, glycosides, saponins and phytosterols. Flavonoids have been shown to possess diuretic activity.¹⁴ The flavonoids present in this formulation is confirmed as quercetin by preparative PV with UV spectral studies (UV λ max : Et OH : 258 and 375 nm)¹⁵⁻¹⁶ Hence the ayurvedic formulation PVM was chosen for diuretic activity.

For the evaluation of diuretic activity of the formulations Lipschitz et al method was employed. The experimental protocols for the diuretic activity have been approved by Institutional Animal Ethics Committee and conducted according to the guidelines of Indian National Academy for the use and care of experimental animals. The animals were maintained at a well ventilated, temperature controlled ($30 \pm 1^\circ\text{C}$) conditions. The animals were acclimatized to laboratory conditions before the test. Over night fasted animals were divided into three groups. Each consisting of six animals. Group I served as negative control and received only normal saline (25 ml/kg p.o). Group II received furosemide (20 mg/kg p.o) as reference diuretic. Group III received PVM (3ml / kg p.o). Immediately after administration, the rats were placed in metabolic cages specially designed to separate the urine and faeces and kept at room temperature ($25 \pm 5^\circ\text{C}$). The urine was collected in a measuring cylinder upto 5 h. after treatment. During this period the animals were deprived from food and water. The urine was collected and measured for both control

and drug treated groups. The urine sample were analysed for Na⁺, K⁺ concentrations by flame photometry while chloride concentration by titrimetrically.¹⁷ The experimental data were expressed as mean ± SD. The significance of difference among the various different groups and positive control group were analyzed. Statistical significance was determined using student's 't' test.¹⁸ PVM showed significant activity as compared to the standard (P < 0.01). (Table 2)

PVM produces a significant diuretic effect in rats. The reference drug furosemide acts at

the site of ascending loop of henle and produce the effect of reduction in chloride transport. Hence, Na⁺ absorption has been reduced. This reduces the osmotic pressure gradient and increases the excretion of urine.¹⁹ Since the test drug may act at the site of ascending loop of henle. PVM provides cheaper and safer diuretic activity. The possible diuretic activity could be due to the presence of the bioactive components like quercetin, achryranthine, baetine, saponins and terpenoids.²⁰

Table 1: Description of investigated drugs Punarnavasavam (PVM)

Ingredient	Botanical Source	Quantity	Parts used
Chukku	<i>Zingiber officinale</i> rose	500 g	Rhizome
Kurumulaku	<i>Piper nigrum</i> linn	500 g	Fruit
Thippali	<i>Piper longum</i> linn	500 g	Fruit
Kadukka	<i>Terminalia chebula</i> retz	500 g	Fruit
Nellikka	<i>Phyllanthus emblica</i> linn	500 g	Bark
Thanikka	<i>Treminalia bellirical</i> roxb	500 g	Bark
Maramanjai	<i>Cosciniun fenestratum</i> colebr	500 g	Bark
Cheruvazhudina	<i>Solanum anguri</i> lam	500 g	Root
Venvazhudina	<i>Solanum melogene</i> linn	500 g	Root
Aadalodakam	<i>Justice beddorei</i> bennet	500 g	Whole plant
Aamanakkiver	<i>Ricinus communis</i>	500 g	Seed
Kadukurohini	<i>Picrorhiza scrophulariflora</i> reii	500 g	Rhizome
Aththippali	<i>Scinadapsus officinalis</i>	500g	Fruits
Thavizhamaver	<i>Boerharia diffusa</i> linn	500g	Root
Veppinthol	<i>Melia azadirachata</i>	500g	Bark
Chittamridu	<i>Tinspora cordifolia</i>	500g	Stem
Mullankikkizhangu	<i>Raphnos sativas</i> linn	500g	Rhizome
Kodithoova	<i>Tragia involuerata</i> linn	500g	Root
Padolam	<i>Trichosanthes lobata</i> roxb	500g	Twing
Thathiripoo	<i>Wood Redia flouribunda</i> linn	500g	Flower
Munthiringa	<i>Vitis vinifera</i> linn	500g	Fruits

Table 2: Effect of PVM on excretion parameters

Group	Dose	Urine (ml)	Na ⁺ mEq/lit	K ⁺ mEq/lit	Cl μmoles	Na ⁺ /K ⁺ ratio
Normal Saline	5 ml/Kg	1.3±0.09	84±7.3	65±5.3	69±0.12	1.29±0.12
PVM	3 ml/Kg	2.3±0.14	123±10.1*	90±8.1*	87±7.3*	1.37±0.09*
Furosemide	20 ml /Kg	2.2±0.12	128±0.14*	113±7.9*	88±8.7*	1.13±10.1*

* P < 0.01

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