WORLD JOURNAL OF PHARMACEUTICAL RESEARCH
SJIF Impact Factor 5.990
Volume 4, Issue 5, 2060-2068. Research Article ISSN 2277– 7105

EFFECT OF *TAKRADHĀRĀ* ON GLUCOCORTICOID HORMONE IN PSORIASIS

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Article Received on
06 March 2015,

Revised on 29 March 2015,
Accepted on 19 April 2015

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ABSTRACT

Takradhārā is very popular and effectively practiced in many clinical conditions. Different institutions and eminent scholars claim that the effect is because of its stimulations in the H P A Axis. But the same was not being proved by sound research works. Hence the present study titled "Effect of *Takradhārā* on Glucocorticoid Hormone in Psoriasis - RCT" was planned to take up the issue. Glucocorticoid, the stress hormone is regulated by the H P A Axis. Concentration of the hormone is found elevated in many stressful conditions like Psoriasis. Before treatment, the mean cortisol level was found elevated in all participants (13.08 ± 4.31). In the treatment group 23.86% reduction was observed in cortisol level, which was significant at 1% level. In the control group 5.40% reduction in cortisol level was insignificant (>0.05). Hence, *Takradhārā* is effective in reducing raised cortisol level in Psoriasis. Reduction in PASI score was significant in *Takradhārā* group in comparison with the control group (<0.01). Significant reduction observed in redness in both groups. Reduction in thickness and itching was significant in treatment group. Hence, the present R C T concludes with the information that *Takradhārā* reduces the elevated cortisol hormone in participants with Psoriasis.

KEYWORDS: *Takradhārā*, Psoriasis, HPA axis and Glucocorticoid hormone.

INTRODUCTION

The purpose of scientific writing is to communicate new scientific findings. Our *Acārya* have opined that various kinds of diseases can manifest in accordance with time, geography and

etiological factors affecting the human systems and a number of treatment modalities are explained in ancient texts and these treatment modalities are being used as per need, *mūrdhini taila(Ch.Su.5/83)*[1] is one among them. *Mūrdhini taila* is a combination of four treatment *(abhyanga, seka, pichu* and *śirovasti) (A.H Sū. 22)*[2] methods which are having superiority from first to last. *Seka* is one of the most famous and effective treatment among the *mūrdhini taila(A.H Sū. 22).*[3] Its indications and contraindications[4] are also explained very clearly in *"Dhārākalpa"* under the chapter of *śiarsekādividhi adhyāya.* The *mūrdhini taila* is ideal for disorders afflicting the parts above the shoulder.[5]

Dhārā is having a wide range of action. All practitioners, institutes and traditional physicians are using this treatment modality in their daily practice but unfortunately its mechanism of action is not established so far. About the mode of action all physicians, scholars and academicians are having their own thought and logic. Many research works have already been done on various types of *dhārā* but they are not proven scientifically, all scholars have given probable mode of action of *Takradhārā.* Some say it regulates *tridosha*, acts on *marmā* and *chakra*, helps to concentrate, increases blood supply to the brain and a few says it stimulates the endocrine system etc.

Dr. Raja Pandi (2007, Bijapur) says that *Takradhārā* is a strong antihypertensive remedy and its antidepressant (Dr. Pratap G. 2007 Hassan) effect is already proved by many scholars. One idea is that *Takradhārā* may be having role on the hormonal level. Till now there is no available work on *Takradhārā* based on any kind of hormone. It was not possible to find the effect of *Takradhārā* on all hormones, so present study was planned to find its effect on the stress hormone i.e. Cortisol.

Psoriasis is a chronic, common, non contagious and auto-immune skin disease affecting about 1-2% of general population (Shah 2006). Clinically psoriasis exhibit itself as dry, well-defined macules, papules and plaques of erythema with layer of silvery scales. The appearance of a typical lesion is characteristic for psoriasis.[6] Psoriasis is an immunologic disease with contributions from genetic susceptibility and environmental factors.[7] Galen was the first who used the word 'Psoriasis' (129-99 BC).[8] Prevalence in different populations varies from 0% to 11.8% (Kaur I et al, 1986) (Bedi TR. 1977) (Farber EM, Nall L.1998). Psoriasis is twice more common in males compared to females in India.[9],[10]The adverse effect of Psoriasis affects quality of life badly and is very difficult to control (Kaplan 2006). Psychological problems can arise from the feelings of the patient about his/her appearance,

social rejections, guilt, embarrassment for self and family, and emptiness.[11] This hormone level is high in stressful conditions (Kaplan and Sadock's 2007) (C. Guyton and John E. Hall, 2006). Physiological stress may cause or exacerbation of Psoriasis.[12] Psycho dermatologists say that all skin disorders are having very strong and close link with psyche of the patients. Psychosomatic disorders like psoriasis are associated with skin problems that are not directly connected to the mind but that react to emotional states, such as stress (Koo & Lebwohl, 2001).

In *Ayurvedic* terminology psoriasis is roughly correlated with *kushţha* specially *kaphavāta pradhāna kushţha*[13] and basically *Takradhārā* is having *kaphavātahara* property. Many research works (Adarsh 2005) proves that Psoriasis can be correlated with *Sidhma Kushţha* and it is accepted by all scholars.

HPA axis, Glucocorticoids, Stress and Psoriasis

The hypothalamic-pituitary-adrenal axis (HPA or HTPA axis), also known as the Limbic-hypothalamic-pituitary-adrenal axis (LHPA axis) and, occasionally, as the hypothalamic-pituitary-adrenal- gonadotrophic axis, is a complex set of direct influences and feedback interactions among the hypothalamus, the pituitary gland and the adrenal glands. The interactions among these organs constitute the HPA axis, a major part of the neuro-endocrine system that controls reactions to stress and regulates many body processes, including digestion, the immune system, mood and emotions, sexuality etc. All the hormones in the endocrine cascade initiated by stress, the glucocorticoids are the most important because of their widespread effects throughout the body and in the brain. The brain contains target cells for adrenal glucocorticoids secreted in stress.

Stress is the most important precipitating factor for Psoriasis (Kaplan 2006). Stress is maintained by a special mechanism under the influence of HPA axis (Guyton and Hall, 2006). The link between Psoriasis and stress needs to be examined. Scientists have discovered that patients affected by Psoriasis have a greater concentration of nerves in the skin. Nerves emit neuropeptides which transmit nerve impulses. The neuropeptides can cause or even aggravate Psoriasis. Stress isn't just a by-product of psoriasis - it's also one of its principal triggers. Some patients report that their first psoriasis outbreak came during a period of great stress. Excess cortisol causes insomnia and can strikingly elevate or depress the mood.[14] Simon (1949) has studied Psoriasis in Tropics and reported that psoriasis was 30

times more common in Europeans.[15] In 1977 –78 Seville has investigated the relationship between psoriasis and psychological stress.[16]

Scientists have found that the hormone cortisol, which alters the immune system responses and is released at times of physical or emotional stress tends to be found at higher levels in people with psoriasis. Conversely, a 2008 study in the *International Journal of Dermatology* reported that three-quarters of those with psoriasis experience significant drops in cortisol levels during remissions of the disease.

MATERIALS AND METHOD

Many studies are conducted in the area of *Dhārā* in various disorders and all research scholars are having their own thoughts regarding the mode of action of *Takradhārā*. There is no study on the hormonal effect of *Takradhārā*. Hence this study was selected with following aim and objectives.

Aims and Objectives

1. To find out the effect of *Takradhārā* on Glucocorticoid Hormone.
2. To find out the effect of *Takradhārā* in psoriasis.

Methodology

Twenty participants satisfying the eligibility criteria were divided into two equal groups by following the Random number table- the Trail group and Control group.

Study Design **:** Randomized Controlled Trial
Sample Size **:** 20 participants (10 in each group)
Duration **:** The duration of study was seven days
Source of data **:** O P D and I P D of V.P.S.V. Ayurveda College, Kottakkal.

Table No.1: Showing inclusion and exclusion criteria

S.No.	Inclusion criteria	Exclusion criteria
1.	Age – 21 - 40yrs	Diabetes Mellitus, Hypertension and Pregnancy
2.	Sex -No discrimination	Psoriatic arthropathy and other Systemic illness.
3.	Diagnosed cases of psoriasis	Chronicity – more than 10 yrs
4.	Positive Auspitz sign	
5.	Eligible for *Takradhārā*	

Table No.2: Showing intervention

S. No.	**Trail Group** (7 days)	**Control Group** (7 days)
1.	*Mahātiktakam kwātha* - 90ml twice daily	*Mahātiktakam kwātha* - 90ml twice daily
2.	*Dūshivishāri gulikā* - 1 twice daily with *kwātha*	*Dūshivishāri gulikā* - 1 twice daily with *kwātha*
3.	*Khadirārishtam* - 25ml twice daily after food	*Khadirārishtam* - 25ml twice daily after food
4.	*Takradhārā* for 7-days (45min/day) at 4.30pm	No *Takradhārā*

Criteria for assessment

1) Glucocorticoids hormone level (8am)
2) PASI score
3) Total cholesterol

Collection of data: The data was collected from each group before treatment and after treatment. Scoring was given and finally the data was compared and analyzed.

Statistical analysis: The data was collected before treatment and after treatment. Thus collected data were subjected to statistical analysis by using student's t-test along with consultation of a bio-statistician.

RESULT AND INTERPRETATION

Table No.3: Comparison of baseline Cortisol level

Group	BT	S.D.	t-value	p-value
Treatmen	12.47	4.97	0.67	>0.05
Control	13.68	3.66		

In both the groups baseline value of cortisol level were more or less similar and on comparison also difference was insignificant, so these value were taken as standard value and taken for the study.

Table No.4: Effect on Cortisol levels before and after study

Group	BT	AT	M.D.	%	S.D.	t- value	p- value
Treatment	13.49	10.27	3.22	23.86	1.94	4.97	<0.01
Control	13.68	12.94	0.74	5.40	2.70	0.70	>0.05

The mean score of cortisol in treatment group, before treatment was 13.49 and after treatment came down to 10.27. So the mean difference was 3.22 with a standard deviation of 1.94. Reduction in cortisol levels was statistically significant at 1% level in treatment group with

the t-value of 4.97. The mean score of cortisol in control group, before treatment was 13.68 and after treatment came down to 12.94. So the mean difference was 0.74 with a standard deviation of 2.70. Reduction in cortisol was statistically insignificant with the t-value of 0.7 in control group.

Table No.5: Effect on PASI-score before and after study:

Group	BT	AT	M.D.	%	S.D.	t- value	p- value
Treatment	12.02	6.98	5.04	41.9	2.81	5.67	<0.001
Control	13.2	10.5	2.7	20.45	1.84	4.63	<0.01

The mean PASI score in treatment group, before treatment was 12.02 and after treatment was 6.98. So the mean difference was 5.04 with a standard deviation of 2.81. In control group mean difference was 2.7 with a standard deviation of 1.84. The decrease in PASI score level was significant in treatment group (<0.001) and significant in the control group (<0.01) as well.

Table No.6: Comparison of the effect on PASI score before and after study between both group.

Group	Mean	S.D.	M. D.	t value	P value
Treatment	5.04	2.81	2.34	2.20	<0.01
Control	2.7	1.84			

Mean change in PASI score was 2.34 and t- value was 2.20 which was found to be significant at 1% level. Treatment group shows significant reduction in PASI score.

Cortisol hormone level

Takradhārā shows significant reduction in cortisol level. Internal medicines were given in control group and these medicine shows insignificant reduction in cortisol level. This change shows that definitely *Takradhārā* is having role on cortisol hormone as well as on HPA axis. *Takradhārā* is having *samasītoshṇa* and *stambhana* properties. Aggravated *ūshna* and *sara guṇa* of *pitta dosha* is coming to normalcy by *sīta and stambhana* propreties of *Takradhārā. Pitta dosha* is having role in the secretion of body fluids like endocrine secretions by its *ushṇa* and *sara* properties, as *pitta* is a major factor helping in endocrine secretion and *vāta dosha* is helping to give movements for proper functioning of all endocrine secretions by its *chala guṇa*. HPA-axis is governed by *chala guṇa* of *vāta dosha* and *sara guṇa* of pitta dosha. *Takradhārā* may be causing proper functioning of *vyāna vāta* and *vyāna vāta* will help to HPA axis to secrete normal amount of CRH, ACTH and cortisol etc. *Takradhārā* provide

relaxation to the neural impulse which cause shortening of CRH and it is controlling the ACTH production along with vasopressin and helps to reduce plasma cortisol level.

PASI-score

The mean score of PASI before treatment was 12.02 and after treatment it reduced to 6.98. The mean difference was 5.04 with a standard deviation of 2.81. In control group mean difference was 2.7 with a standard deviation of 1.84. The decrease in PASI score level was highly significant in treatment group (P <0.001) and significant in the control group (P <0.01). Though PASI is not a strong tool for assessment of severity of Psoriasis but results were very satisfactory in both groups.

Mean change in PASI score was 2.34 and t- value was 2.20 which was significant at 1% level. In present study statistically significant reduction was observed is PASI score. Reduction in PASI score shows that *Takradhārā* is highly effective in Psoriasis.

SUMMARY

Takradhārā is very popular and effectively practiced in many clinical conditions. Different institutions and eminent scholars claim that the effect is because of its stimulations in the HPA Axis. But the same was not being proved by sound research works. Hence the present study titled "Effect of *Takradhārā* on Glucocorticoid Hormone in Psoriasis - A Randomized Controlled Trial" was planned to take up the issue.

The data regarding the effect of therapy on various assessment parameters have been statistically analyzed by following the paired and unpaired student t test and presented in the form of tables. Significant reduction was observed in cortisol level by *Takradhārā*. Reduction in PASI score was significant in *Takradhārā* group in comparison with the control group (<0.01). Significant reduction observed in redness in both groups. Reduction in thickness and itching was significant in treatment group. The reduction observed in scaling in both groups was insignificant.

CONCLUSION

The Conclusions drawn on the basis of this clinical study conducted on 20 participants of Psoriasis are as follows:

- Level of Cortisol significantly reduced after Takradhārā (P < 0.01).
- *Takradhārā* might have influenced the HPA axis.

- Significant (P < 0.01) reduction was observed in PASI score.
- Reduction in itching was statistically significant in *Takradhārā* group only.
- The reduction in redness was highly significant (P < 0.001) in treatment group.
- It was significant (<0.05) in control group.
- In treatment group thickness reduced significantly (P < 0.001).
- The reduction in scaling was statistically insignificant in both groups.
- The reduction in Total Cholesterol level was significant in treatment group (P < 0.01)

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