



UPASHYATMAKA STUDY TO EVALUATE THE EFFICACY OF JATAMAMANSI CHURNA & PUNARNAVA CHURNA ON VYANA BALA VAISHAMYA (HYPERTENSION)

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ABSTRACT

The WHO rates hypertension as one of the most important causes of premature death worldwide. Worldwide, approximately 1 billion people have hypertension, contributing to more than 7.1 million deaths per year. The number of adults with hypertension in 2025 is predicted to increase by about 60% to a total of around 1.56 billion. In India, Cardiovascular diseases caused 2.3 million deaths in the year 1990; this is projected to double by the year 2020. Numbers of drugs are available in modern medicine to treat the disease in its symptomatically active state but still are unable to cure the hypertension. Hyperfunction of *Vyana* is considered under *Vyana Bala Vaishamyia* which produces increased force in the wall of the channels (blood vessels) to produce the disease hypertension. In the present clinical trial '*Punarnava Churna*' and '*Jatamansi Churna*' given orally, administered for 1 month twice a day after food. 60 clinically diagnosed patients of hypertension were selected randomly and divided into two groups. BP, CBC, RBS, ECG, Blood urea, Serum creatinine and Lipid profile were done before and after the clinical trial. After completion of study signs and symptoms were controlled significantly and also there were significant changes in laboratory findings.

KEYWORDS: Hypertension, *Vyana Bala Vaishamyia*, *Vyana*, *Punarnava Churna*, *Jatamansi Churna*.

INTRODUCTION

Hypertension (HTN or HT), also known as high blood pressure or arterial hypertension, is a chronic medical condition in which the blood pressure in the arteries is persistently elevated.^[1] Hypertension is common disorder rising in incidence and once established treatment is obligatory. It is growing in incidence globally particularly in developing countries.^[2] The WHO rates HTN as one of the most important causes of premature death worldwide.^[3]

Overall, approximately 20% of the world's adults are estimated to have hypertension, when hypertension is defined as BP in excess of 140/90 mm Hg. The number of adults with hypertension in 2025 is predicted to increase by about 60% to a total of around 1.56 billion. In India, Cardiovascular diseases caused 2.3 million deaths in the year 1990; this is projected to double by the year 2020. Hypertension is directly responsible for 57% of all stroke deaths and 24% of all coronary heart disease deaths in India.

Vyana is a type of *Vata* which moves all over the body. Its *Nirukti* indicates that it affects the whole body. *Bala* here is an indicative of the normal *Guna* (properties) and

Karma (functions) of *Vyana Vyana. Vaishamyia* refers to *Vikriti* or disequilibrium of *dosha* in which they are able to produce the disease. As per (*Ch. Sha. 6/4*,) *Vaishamyia* means *Vrddhi or hrasa*, i.e. either increase or decrease. Therefore, *Vyana Bala Vaishamyia* may either be considered as increased or decreased function of *Vyana Vyana*. But, it is also mentioned that the decreased *dosha* is not able to manifest its own symptoms.^[4] So, the decreased *dosha* may not be able to produce any disease. Hence, in the present study, hyper-function of *Vyana Vata* is considered under *Vyana Bala Vaishamyia* which produces increased force in the wall of the channels (blood vessels) to produce the disease 'Hypertension'.

In essential hypertension, mainly *Vataprakopa* occurs, particularly *Vyana Vata* as it is responsible for *rasa-rakta sanvahana*. By virtue of its *Ruksha, Sheeta* and *Khara Chala*, *rasa-raktavahini dhamanis* are constricted, also its *ruksha Chala* dries the *mala rupa kapha* at the inner side of the vessels making them more rigid (*kathin*). Vascular lumen may be reduced further leading to obstruction in it. So, for normal circulatory function, increased force of *Vyana. Vyana* is required resulting into *Vyana Bala Vaishamyia* and hence leading to the development of hypertension.

The assessment of effects of *Punarnava Churna* and *Jatamansi Churna* in the patients of hypertension was the chief objective of the study along with the replacement of the modern anti-hypertensive drugs by a safe and effective alternative in *Ayurveda*.

AIMS AND OBJECTIVES

1) To conduct an *Upashyatmaka* (randomized parallel group trial) to assess the efficacy of *Jatamansi Churna* (*Nardostychnus jatamansi*) & *Punarnava Churna* (*Boerhavia diffusa*) On *Vyana Bala Vaishmya* (Hypertension).

MATERIALS AND METHODS

Study site: Laboratory / OPD / IPD of NIA hospitals, Jaipur and Certain NIA camp sites.

Selection of patients

For the clinical study, 60 clinically diagnosed patients of essential hypertension patients were randomly selected from the OPD / IPD of N.I.A, Jaipur, after excluding the drop outs and cases that did not fulfill the criteria of diagnosis. Further, these 60 patients were categorized into two groups. 30 Patients of Group A were given drug *Jatamansi Churna* (*Nardostychnus Jatamansi*) 2gm and 30 patients of Group B were given of drug *Punarnava Churna* (*Boerhavia diffusa*) 2gm. After 30 days of the trial, results before treatment and after treatment were compared and analyzed statistically.

Inclusion Criteria

1. Patients willing to sign the consent form for the clinical trial.
2. Either sex or age group above 18 yrs.
3. Patients of Hypertension (JNC^{8th} Criteria.).

Exclusion Criteria

1. Known case of Renal diseases, Diabetic Mellitus
2. Pregnancy induced hypertension
3. History of drugs like Oral Contraceptive Pills, steroids.
4. Known case of Ventricular hypertrophy, Secondary hypertension, Hypertension with severe complication.
5. Known case of Portal hypertension
6. Renal artery stenosis induced hypertension.

Diagnostic criteria

- History, Clinical examination, Systemic examination according to specially prepared CRF incorporating

TRIAL DRUGS

Table No. 1: Group A- *Rasa panchak of Jatamansi*.^[5]

Drug	Botanical name	Rasa	Guna	Virya	Vipaka	Doshakarma
<i>Jatamansi</i>	<i>Nardostychnus jatamansi</i>	<i>Tikta, Kashaya, Madhura</i>	<i>Laghu, Snigdha</i>	<i>Sheet</i>	<i>katu</i>	<i>Tridoshaghna</i>

Ayurveda parameters of dashvidha pariksha and all the signs and symptoms of disease+ etc.

- Laboratory parameters- BP, CBC, RBS, ECG, Blood urea, Serum creatinine and Lipid profile.

Plan of the study

The present trial was randomized open trial. 60 clinically diagnosed and confirmed patients of hypertension were selected and randomly divided into two groups. Group A was treated with drug '*Jatamansi Churna* (*Nardostychnus jatamansi*)' & Group B was given '*Punarnava Churna* (*Boerhavia diffusa*)' At the end of the treatment, efficacy of both the drugs was compared statistically. The management plan was as follows:

- **Group A** - 30 registered patients of hypertension were given *Jatamansi Churna* (*Nardostychnus jatamansi*) daily for 4 weeks in the dose of 2gms.twice a day
- **Group B** - 30 registered patients of hypertension were given *Punarnava Churna* (*Boerhavia diffusa*) daily for 4 weeks in the dose of 2gms twice a day.

Assessment of disease

Assessment of the blood pressure was done by measuring it with the help of its measuring device, sphygmomanometer and was observed after each follow up for its measurement. Clinical assessment of symptoms and their severity was objectively done in terms of their gradation. The relative extent of all these criteria was recorded according to the rating scale in each patient at the initial stage and subsequent follow-ups.

Data Documentation and Statistical Analysis

Data collected in various stages of the clinical trial were analyzed using Graph Pad InStat (version 3.10, 32 bit for windows created July 10, 2009).

For subjective (Non-parametric) variables

- Wilcoxon Matched Pair Signed Rank Test in individual group comparing before & after scores.
- Mann-Whitney test for group comparison.

For objective (Parametric) variables

- Paired t test (P = Two tailed 'p' value) - in individual groups comparing before and after measurements.
- Unpaired t test for group comparison.

Table No. 2: Group A- *Rasa panchak of Punarnava*.^[6]

Drug	Botanical name	Rasa	Guna	Virya	Vipaka	Doshakarma
<i>Punarnava</i>	<i>Boerhavia diffusa</i>	<i>Madhura, Tikta, Kashaya</i>	<i>Laghu, ruksha</i>	<i>Ushna</i>	<i>Madhura</i>	<i>Vatashlaishmahara</i>

OBSERVATION

Table No. 3: Symptom wise distribution of patients.

Sr. No.	COMPLAINTS	GROUP A (n=30)		GROUP B (n=30)		TOTAL (n=60)	
		No.	%	No.	%	No.	%
1.	<i>Shirshula</i>	24	80.0	27	90.0	51	85.0
2.	<i>Bhrama (Vertigo)</i>	22	73.3	20	66.7	42	70.0
3.	<i>Krodhaprachuryata</i>	24	80.0	28	93.3	52	86.7
4.	<i>Klama (Fatigue)</i>	23	76.7	26	86.7	49	81.7
5.	<i>Kampa (Tremors)</i>	17	56.7	21	70.0	38	63.3
6.	<i>Daurbalya</i>	25	83.3	27	90.0	52	86.7
7.	<i>Anidra</i>	25	83.3	20	66.7	45	75.0
8.	<i>Hratadrava</i>	21	70.0	25	83.3	46	76.7
9.	<i>Smratinash</i>	28	93.3	26	86.7	54	90.0
10.	<i>Svashkrichhata</i>	21	70.0	24	80.0	45	75.0
11.	<i>Raktangakshita</i>	12	40.0	10	33.3	22	36.7
12.	<i>Nishamutrata</i>	22	73.3	27	90.0	49	81.7
13.	<i>Bahumutrata</i>	22	73.3	26	86.7	48	80.0

Table no. 4: Overall effect of therapy on Subjective Variables in both groups.

Subjective Variables	GROUP A		GROUP B	
	%Improvement	p value	%Improvement	p value
<i>Shirshula</i>	56.58	<0.0001	53.95	0.0012
<i>Hritdrava</i>	36.57	< 0.0001	51.81	< 0.0001
<i>Bhrama</i>	61.54	< 0.0001	28.13	< 0.0001
<i>Klama</i>	36.74	0.0012	49.28	0.1390
<i>Anidra</i>	51.35	<0.001	33.41	<0.001
<i>Raktangakshita</i>	1.05	0.0207	0.40	0.0416
<i>Krodhaprachuryata</i>	26.87	<0.0001	59.46	<0.0001
<i>Svashkrichhata</i>	19.58	<0.0001	55.71	<0.0001
<i>Bahumutrata</i>	48.91	<0.0001	50.00	<0.0001
<i>Smratinash</i>	33.62	<0.0001	17.34	<0.0001
<i>Kampa</i>	29.63	<0.001	18.45	<0.001
<i>Daurbalya</i>	39.24	<0.0001	42.68	<0.001

Table no. 5: Overall effect of therapy on Objective Variables in both groups.

Objective Variables	GROUP A		GROUP B	
	% Improvement	p value	%Improvement	p value
Pulse	1.09	0.0418	0.87	0.4989
B.P.(systolic)	8.19	<0.0001	7.57	<0.0001
B.P.(diastolic)	7.94	<0.0001	6.35	<0.0001
RBS	0.03	0.1610	0.14	0.1272
TLC	0.75	0.0212	1.01	0.1927
Blood urea	11.51	0.0043	2.09	0.4178
Sr. creatinine	0.00	0.1377	1.52	0.4445
Sr. cholesterol	2.43	0.0681	1.84	0.1372
Sr. triglyceride	6.73	0.0267	20.28	0.5804
HDL	1.78	0.0033	1.16	0.0540
LDL	0.58	0.6847	1.29	0.0101
VLDL	4.28	0.0150	0.46	0.0771

Discussion on effect of treatments on Chief Complaints

The treatment in group A showed better improvement in *Shirshula* (56.58%), *Bhrama* (61.54%), *Raktangakshita* (1.05%), *Kampa* (29.63%), *Klama* (6.81%), and *Smritinash* (33.62%). When Wilcoxon matched pairs test was applied to analyze the results statistically, all of the above results were found extremely significant except in *Shirshula*, *Klama* which showed very significant result and *Raktangakshita* showing only significant.

Group B showed better improvement in *Krodhprachuryata* (59.46%), *Daurbalya* (42.68%), *Anidra* (51.35%), *Hritdrava* (51.81%), *Svashkrichhata* (55.71%), and *Bahumutrata* (50%). They all showed statistically extremely significant result. Since, the trial drug is having *Madhur rasa*, properties, so significant result has been found in the above said complaints.

However, Group A also showed statistically extremely significant result on *Krodhprachuryata* (26.87%), *Anidra* (29.50%), *Hritdrava* (36.57%) and *Svashkrichhata* (19.58%), *Daurbalya* (39.24%), *Bahumutrata* (48.91%). Group B also showed statistically extremely significant result on *Shirshula* (53.95%), *Bhrama* (28.13%), *Smritinash* (17.34%) and *Kampa* (18.45%) and showed significant result on *Raktangakshita* (0.40%) and showed not significant result on *Klama* (5.80%).

On applying Mann-Whitney test for inter group comparison of the results between the two groups, A & B; it was found that group B had better results on *Daurbalya*, *Anidra*, *Hritdrava*, *Svashkrichhata*, *Bahumutrata* and *Krodha Prachurata*. Among them showed statistically extremely significant whereas group A showed better result in all symptoms, other than those mentioned above, no significant result was found statistically.

Probable modes of action of 'Jatamansi' on symptoms produce in hypertension

It might have relieved the symptom *Shirshula* which is found most commonly in hypertension due to *Vednasthapana* and *Medhya* its property because *Shirshula* and hypertension both have *Rakta* as dominant *dushya* as *Jatamansi* is said to be and *Raktadoshar* same might be the reason of its effect on *Raktangakshita* as *rakta* is predominantly involved in these features. It might have relieved in *kampa* due to its property of *Nadibalya*.

The trial drug possess *Nidrajanaka* and *Medhya* property by which it helps in relieving stress, anxiety giving stability to mind which might be the reason of getting relief by it in *Anidra* and *Krodha Prachuryata*. Being a *Sangyasthapaka* it might have improved in *Smritinash*. *Madhura rasa* of drug causes and *Raktashodhana*. *Madhura rasa* by its *Prahladana guna* increases the *Oja* in the body and thus regulates the circulatory function of

heart by reducing *Chala Guna* of *Vata*. The drug also possesses the property of *Hridya* and *Balya*, that's why it might have relieved in the symptoms *Hritdrava* and *Svashkrichhata*. The drug is having *Katu Vipaka* property which helps to alleviate obstruction in the *Srotas* due to *Aam* by its digestion and there by resulting into *Srotoshodhana*. This might have the reason of its relief in *Klama*.

It also acts as a nervine tonic, antioxidant and immunomodulator through its *Rasayana* property. By this property, it normalizes the process of *Dhatu* formation producing the *Prasastha Dhatus* and purifies vitiated *Dhatus*. It is also having the property of *Balya* and it is also said to be used in *Daurbalya* as its *Rogagnata*. That's why it must have helped in getting relief in *Daurbalya*.

On analyzing the above results, it is clear that the treatment given to group A has better effect on the symptoms of the disease than that of group B. Hence, it can be stated that *Jatamansi Churna* is an effective treatment remedy for hypertension.

Probable modes of action of 'Punarnava' on symptoms produce in hypertension

It might have relieved the symptom *Shirshula* which is found most commonly in hypertension due to its *Shirshula* and *Madhura*, *Tikta Rasa* property *Shirshula* and hypertension both have *Pittadosha* as dominant *Dushya* as *Punarnava* is said to be *Madhura*, *Tikta rasa* property (*Pittshamaka*). Same might be the reason of its effect on *Raktangakshita* as *Pitta* is predominantly involved in these features. It might have relieved in *kampa* due to its property of *Vataprashamana*.

The trial drug possess *Rasayana* property by which it helps in relieving stress, anxiety giving stability to mind which might be the reason of getting relief by it in *Anidra* and *Krodhprachuryata*. Being a *Rasayana*, it might have improved in *Smritinash*. *Madhura Rasa* of drug causes *Pittashamak*. *Madhura rasa* by its *Prahladana guna* increases the *Oja* in the body and thus regulates the circulatory function of heart by reducing *Chala guna* of *Vata*. The drug also possesses the property of *Mutral* and *Balya*, that's why it might have relieved in the symptoms *Hritdrava* and *Svashkrichhata*. The drug is having *Deepan* property which helps to alleviate obstruction in the *Srotas* due to *Aam* by its digestion and thereby resulting into *Srotoshodhana* and *Vatanulomana*. This might have the reason of its relief in *Klama*.

It is also having the property of *Balya* and it is also said to be used in *Daurbalya* as its *Rogagnata*. That's why it must have helped in getting relief in *Daurbalya*. *Rasayana* drugs also possess the property of *Srotoshodhana* which makes them useful where the *Samprapti* of disease is due to *Avarana* i.e. due to *Margavrodha*, as the same happens in hypertension.

Discussion Regarding Effect of Therapy on Blood Pressure

Systolic Blood Pressure - In the study, an average of 8.19% and 7.57% decrease was noticed in Patients of group A and group B, respectively which was considered statistically extremely significant in both the cases. Inter group comparison between the two groups for the effect on S.B.P. was done using unpaired t-test with Welch correction which showed statistically not significant result with $p = 0.7298$.

Diastolic Blood Pressure - In the study, an average of 7.94% and 6.35% decrease was noticed in Patients of group A and group B, respectively which was considered statistically extremely significant in both the cases. Inter group comparison between the two groups for the effect on D.B.P. was done using unpaired t-test with Welch correction which showed statistically not significant result with $p = 0.2173$.

Probable modes of action of drug 'Jatamansi' on the Blood pressure

The drug is having *Deepan* and *Katu Vipaka* property which helps to alleviate obstruction in the *Srotas* due to *Aam* by its digestion and thereby resulting into *Srotoshodhana* and *Amashoshaka*. Destruction of *Srotorodha* regulates the movements of *Vata* in its normal direction through the micro channels. Thus, the drug may be effective where pathogenesis of the disease involves obstruction i.e. vitiation of *Vata* due to its *Margavrodha*, which also applies on hypertension. Hence the trial drug having *Sheet virya*, it mainly acts on vitiated *Pitta* and *Rakta dosha* there by also helps to alleviate the *Samprapti* of disease. The drug also helps in the breaking of etiopathogenesis of the disease at the level of *Tridosha* by its property of *Tridoshahara* as in essential hypertension. The drug might have reduced the blood volume resulting into decreased blood pressure due to its *Medhya* and *Akshepashamak* property. *Tikta rasa* may act on *Rasavaha*, *Raktavaha* and *Medovaha Srotas* by its *Vishaghna*, *Deepan*, *Pachan* property. It absorbs excess *Kleda*, *Sweda*, *Kapha*, *Pitta* in the body by its *Pachan* property and helps in reducing blood volume. Through its *Vishaghna* property, it removes toxins from blood and thus purifying it and thus helps in reducing blood pressure.

Hence, we can say that the significant result produced by *Jatamansi Churna* in *Vyana Bala Vaishamya* i.e. hypertension may be due to its *Rasayana* and *Balya* effect there by producing anxiolytic, antistress, CNS depressant effect by inhibiting noradrenergic sympathetic nerves supplying to the heart. Through its *Pachan*, *Medhya*, *Vatanulomana* properties, it relieved *Srotorodha* and does digestion of *Aam* and also decreases blood volume which it may have contributed to decrease in blood pressure.

Probable modes of action of drug 'Punarnava' on the Blood pressure

The drug is having *Deepan* property which helps to alleviate obstruction in the *Srotas* due to *Aam* by its digestion and thereby resulting into *Srotoshodhana* and *Vatanulomana*. Destruction of *Srotorodha* regulates the movements of *Vata* in its normal direction through the micro channels. Thus, the drug may be effective where pathogenesis of the disease involves obstruction i.e. vitiation of *Vata* due to its *Margavrodha*, which also applies on hypertension. Hence the trial drug having *Ushna virya*, it mainly acts on vitiated *Vata dosha* and thereby also helps to alleviate the *Samprapti* of disease. The drug also helps in the breaking of etiopathogenesis of the disease at the level of *Tridosha* by its property of *Tridoshahara* as in essential hypertension. The drug might have reduced the blood volume resulting into decreased blood pressure due to its *Mutral* property. *Tikta rasa* may act on *Rasavaha*, *Raktavaha* and *medovaha Srotas* by its *Shothahara*, *Deepan*, *Pachan* property. It absorbs excess *Kleda*, *Sweda*, *Kapha*, *Pitta* in the body by its *Pachan* property and helps in reducing blood volume.

Hence, we can say that the significant result produced by *Punarnava Churna* in *Vyana Bala Vaishamya* i.e. hypertension may be due to its *Balya* effect thereby producing anxiolytic, antistress, CNS depressant effect by inhibiting noradrenergic sympathetic nerves supplying to the heart. Through its *Pachan*, *Mutral*, *Vatanulomana* properties, it relieved *Srotorodha* and does digestion of *Aam* and also decreases blood volume which it may have contributed to decrease in blood pressure.

Discussion on effect of treatments on the lab investigations

(1.) Random Blood Sugar – In the study, an average of 0.03% and 0.14% decrease was noticed in Patients of group A and group B, respectively which was considered statistically not significant in both the cases. Inter group comparison between the two groups for the effect on RBS was done using unpaired t-test with Welch correction which showed statistically not significant result with $P=0.9426$ ($p>0.01$).

(2.) Blood urea – In the study, an average of 11.51% and 2.09% decrease was observed in Patients of Group A and Group B, respectively which was considered statistically not significant in both the cases. The inter group comparison between the two groups for the effect on B. Urea showed statistically not significant advantage with $p=0.7126$ ($p>0.01$).

(3.) Serum Creatinine – In the study, an average of 0.00% and 1.52% decrease was observed in Patients of Group A and Group B, respectively which was considered statistically not significant in both the cases. The inter group comparison between the two groups for the effect on Sr. Creatinine showed statistically very significant advantage with $p=0.0015$.

(4.) **Sr. Cholesterol** - In the study, an average of 2.43% and 1.84% decrease was observed in Patients of Group A and Group B, respectively which was considered statistically extremely significant in both the cases. The inter group comparison between the two groups for the effect on total cholesterol showed not significant advantage with $p=0.7496(p<0.05)$.

(5.) **Serum Triglycerides** -In the study, an average of 1.19% and 0.73% decrease was observed in Patients of Group A and Group B, respectively which was considered statistically not significant in Group A whereas statistically extremely significant in Group B. The inter group comparison between the two groups for the effect on Sr. triglycerides showed statistically not significant advantage with $p=0.6703(p>0.01)$.

(6.) **HDL** – In the study, an average of 1.78% and 1.16% decrease was observed in Patients of Group A and Group B, respectively which was considered statistically very significant in Group A whereas statistically significant in Group B. The inter group comparison between the two groups for the effect on HDL showed statistically not significant advantage with $p=0.3438(p>0.01)$.

(7.) **LDL** - In the study, an average of 0.58% and 1.29% decrease was observed in Patients of Group A and Group B, respectively which was considered statistically not significant in both the cases. Inter group comparison between the two groups for the effect on LDL showed statistically not significant advantage with $p=0.6673(p>0.01)$.

(8.) **VLDL** – In the study, an average of 4.28% increase and 0.46% decrease was observed in Patients of Group A and Group B, respectively which was considered statistically not significant in both the cases. Inter group comparison between the two groups for the effect on VLDL showed statistically not significant advantage with $p=0.0708(p>0.01)$.

(9.) **TLC** - In the study, an average of 0.75% and 1.01% decrease was observed in Patients of Group A and Group B, respectively which was considered statistically significant in Group A and statistically not significant in Group B. Inter group comparison between the two groups for the effect on TLC showed statistically not significant advantage with $p=0.09632(p>0.01)$.

CONCLUSION

- Both the drugs i.e. *Jatamansi Churna* and *Punarnava Churna* showed statistically extremely significant results in various sign and symptoms of *Vyana Bala Vaishamya*.
- In group A, *Jatamansi Churna* showed statistically extremely significant results in Blood Pressure, *Shirshula*, *Smratinash*, *Anidra*, and statistically significant in Pulse, *Raktangakshita*. It showed statistically significant result in VLDL and

Triglyceride but statistically non significant results in RBS, Sr. Creatinine, TLC and Sr. Cholesterol.

- In group B, *Punarnava Churna* showed statistically highly significant results in *Bahumutrata*, *Krodha pracuryata*, *Klama*, *Bhram*. It showed statistically significant result in LDL but statistically non significant results in Blood Urea, HDL.
- From the results obtained in Group A and B, it can be concluded that therapy *Jatamansi Churna* is a safe and effective *Ayurvedik* treatment of *Vyana Bala Vaishamya* (Hypertension).

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