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Clinical effect of *Suvarna Bindu Prashan*

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ABSTRACT

The quest for excellence in mental and physical health is not new. We find various references and formulations in Ayurvedic classics meant for promoting mental and physical health of a child. *Suvarna Prashan* is one of the formulations explained in age old Ayurvedic classic Kashyap Samhita. This formulation is very widely used now days as a memory and immune booster for children. But there is very little systematic documented study which can be used to evaluate the efficacy of the formulation. *Suvarna Bhasma* was prepared in Ayurved Rasayani Pharmacy, Pune. *Madhu* and *Ghrita* were collected from KLE Ayurveda Pharmacy, Belgaum. *Suvarna Bindu Prashan* was prepared in KLE Ayurved pharmacy, Belgaum. It contains *Suvarna Bhasma*, *Ghrita* and *Madhu*. Twenty apparently healthy male and female children with age group of three to four years were ready to sign inform consent form were selected into two groups each. Subjects in Group A received *Suvarna Bindu Prashan* where as Group B (Control group) did not receive any treatment. Both the groups were observed for six months. Children in *Suvarna Bindu Prashan* group showed significant reduction in the scores of eating habits, behavior, mood, temperament and scores of event of illness. However there was no significant difference in the score of sleeping habit. There was significant increase in IQ percentage.

Key words: Ayurveda, Child health, Immunity, Intelligence, *Suvarna Bindu Prashan*.

INTRODUCTION

The health of a child mostly depends on how well informed are the parents regarding the use of natural strength bestowers like breast milk, a well prepared natural diet, a good healthy unpolluted environment etc. that are required for strengthening the individual. There is a need today to do this so that the physical as well as the mental health is maintained especially of

the children as they are at the passive end of almost all interventions.

The quest for excellence in mental and physical health is not new. We find various reference and formulations in Ayurvedic classics meant for promoting mental and physical health of child. *Suvarna Prashan* is one of the formulations explained in age old Ayurvedic classic Kashyap Samhita.^[1] This formulation contains *Suvarna Bhasma*,^[2] *Ghrita*^[3] and *Madhu*.^[4] It is very widely used now a days as a memory and immune booster for children.

Suvarna^[5] has the properties like *Medhavardhana*, *Agnivardhana*, *Balavardhana*, *Vrushya*, *Ayushyakara* etc. The modern vaccination techniques are specific and are of a great help only when a particular pathogen invades the body, which is a matter of chance. But the Ayurvedic technique like *Suvarna Bindu Prashan* is nonspecific and is in action round the clock guarding the individual as it boosts the immunity^[6] in general. *Suvarna Prasha*^[7] has an added

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benefit as it is *Medhavardhaka*^[8] too and hence potentiates intellect also.

Suvarna Prashan is already in practice in many Ayurvedic institutions, hospitals and clinics throughout India. This procedure has achieved a great success in all centres.

But there are very few systematic documented studies with regards to its efficacy of the formulation. This study was designed to evaluate and document the effect of *suvarna bindu Prashan* in children with respect to improvement in general health status, immunity and intelligence. If *suvarna Prashan* is found to be effective in improving immunity and intelligence then it can be used as a novel concept for promotion of health.

MATERIAL AND METHODS

Parents willing to administer *Suvarna Bindu Prashan* to their children were screened in *Suvarna Bindu Prashan* camp of K.L.E.Ayurvedic Hospital, Belgaum.

Selection of patients

Inclusion criteria

1. Apparently healthy male and female children with age in range of three (3) years to four (4) years.
2. Parent willing to administer *Suvarna Bindu Prashan* to their child and for regular follow up for at least six month for SBP group.
3. Parents not willing to administer SBP to their child. (For control group)

Exclusion criteria

1. Male and female Children below 3 year and above 4 years
2. Already undergoing *Suvarna Bindu Prashan*.
3. Child suffering from any illness which in opinion of investigator will place the child to extra risk.

Study type: Open label, Parallel, Prospective and Observational

Centre: K.L.E.Ayurved Hospital Belgaum.

Indication: Promotion of health and intelligence

Method of Sampling

Children who fulfil eligibility criteria and whose parents were willing to participate in the study and were ready to sign inform consent form were selected for the study.

Grouping

Group A - *Suvarna Bindu Prashan* (SBP) - Twenty apparently healthy children who never received *Suvarna Bindu Prashan* were screened for IQ, QOL Height and Weight parameters

Group B - Control group - Twenty apparently healthy children were selected after survey whose parents were not willing to administer *Suvarna Bindu Prashan* to their children. They were observed for six months. Data (IQ, QOL, Height and weight) was collected every month by home visit.

Route of administration: Oral

Mode and Dose

Four drops of *Suvarna Bhasma* suspended Ghee (4mg gold/dose) followed by four drops of Honey was administered in Group A. Parents were advised not to feed the children for half an hour after the administration.

Dosing Schedule

SBP was administered at the above dose on every month on the day of *Pushyanakshatra*, for consecutive 6 months. Months were considered as lunar months as per Hindu calendar.

Duration: Six month

Method of collection data

Data was collected on following variables

Efficacy Parameters

A. Quality of life

1. Eating habits
2. Sleeping habits
3. Moods and temperaments
4. Behaviour

5. Limitation experience by the parent due to child's health/behaviour

The details regarding quality of life were collected from parents during each visit using structured questionnaire.

B. Immunoglobulin's

1. IgG
2. IgM
3. IgA

Immunoglobulin's were tested only in five subject of each group.

C. Height

D. Weight

E. Events and severity of illness - by using subject's diary of illness

Variables under C, D and E were assessed on every visit.

F. IQ Score

It was assessed using standard Seguin form board on first and last visits i.e. at the baseline and after six months.

Outcome/Efficacy Variable: The primary efficacy variables are

- Improvement in IQ
- Improvement in levels of immunoglobulin's
- Improvement in quality of life
- Reduction in incidence of events of illness

Statistical Study Method

The difference in various complaint scores between the two groups in Quality of life questionnaire, height, weight and IQ was analysed by Analysis of Covariance using respective baseline value as a covariate.

The changes in values of frequency of illness questionnaire within the group was compared using Wilcoxon Signed Rank Test, whereas the changes score analysis between the two groups by using Mann-Whitney U Test.

Clinical Data: Following score category considered during the span of study.

A. Eating Complaint Score

Children belonging to *Suvarna Bindu Prashan* group showed significantly low values of eating complaint score as compared to that of control group from third month onwards.

Table 1: Comparison in eating complaint score between SBP and Control groups

Eating Complaint Score	Visit 1	Visit 2	Visit 3	Visit 4	Visit 5	Visit 6
<i>Suvarna Bindu</i> group	1.5	1.84	1.5	1.3	1.2	1.14
Control group	2	1.85	2	1.8	1.8	1.76
Difference	-0.5*	-0.01	-0.5*	-0.5*	-0.6**	-0.62**

*P<0.05, ** P<-0.01, *** P<-0.001

B. Sleep Complaint Score

No statistically significant difference was seen in sleeping complaint scores between the two groups.

Table 2: Comparison in Sleep complaint score between SBP and Control groups

Sleep Complaint Score	Visit 1	Visit 2	Visit 3	Visit 4	Visit 5	Visit 6
<i>Suvarna Bindu</i> group	1.1	1.18	1.08	1	1.09	1
Control group	1.3	1.21	1.17	1.44	1.15	1.14
Difference	-0.2	-0.03	-0.09	-0.44***	-0.06	-0.14

*P<0.05, ** P<-0.01, *** P<-0.001

C. Mood Complaint Score

Children belonging to SBP group showed significantly low values of Mood complaint score as compared to that of control group from third month onwards.

Table 3: Comparison in Mood and Temperment complaint score between SBP and Control groups

Mood Complaint Score	Visit 1	Visit 2	Visit 3	Visit 4	Visit 5	Visit 6
Suvarna Bindu group	1.4	1.49	1.34	1.2	1.06	1.06
Control group	1.6	1.6	1.71	1.64	1.44	1.43
Difference	-0.2	-0.11	-0.37**	-0.44**	-0.38*	2.49**

*P<0.05, ** P<-0.01, *** P<-0.001

D. Behaviour Complaint Score

Children in SBP group showed significantly low of values Behaviour complaint score as compared to that of children in control group.

This effect was seen from the second month onwards.

Table 4: Comparison in Behaviour complaint score between SBP and Control groups.

Behavior Complaint Score	Visit 1	Visit 2	Visit 3	Visit 4	Visit 5	Visit 6
Suvarna Bindu group	1.6	1.6	1.5	1.4	1.32	1.13
Control group	2.2	2.14	2.2	2.2	1.67	1.57
Difference	-0.6**	-0.54**	-0.7**	-0.8**	-0.35	-0.44**

*P<0.05, ** P<-0.01, *** P<-0.001

E. Limitation Complaint Score

Limitation complaint score was significantly low in children of SBP group as compared to that of control group, till the fourth month.

However after fourth month it was seen that there was no significant difference (P>0.05) between the two groups.

Table 5: Comparison in Limitation complaint score between SBP and Control groups

Limitation Complaint Score	Visit 1	Visit 2	Visit 3	Visit 4	Visit 5	Visit 6
Suvarna bindu group	1.1	1.14	1.14	1.13	1.04	1.06
Control group	1.5	1.5	1.3	1.4	1.2	1.23
Difference	-0.4*	-0.36**	-0.16*	-0.27*	-0.16	-0.17

*P<0.05, ** P<-0.01, *** P<-0.001

F. Total Complaint Score

Over all it was seen that, from second month onwards the total complaint score of children taking SBP was significantly less than of those not receiving SBP.

Table 6: Comparison in Total Complaint Score between SBP and Control groups

	Visit 1	Visit 2	Visit 3	Visit 4	Visit 5	Visit 6
Group 1	6.7	7.3	6.7	5.9	5.8	5.4
Group 2	8.6	8.2	8.2	8.7	7.2	7
Difference	-1.9*	-0.9*	-1.5*	-2.8*	-1.4*	-1.6*

*P<0.05, ** P<-0.01, *** P<-0.001

G. Height Score

There was no statistically significant difference at baseline in height of children in between the group.

However it was seen from third month onwards that the height of children in SBP group was significantly more (P value <0.05) than height of children in control group.

Table 7: Comparison in Height between SBP and Control groups

Height	Visit 1	Visit 2	Visit 3	Visit 4	Visit 5	Visit 6
Suvarna Bindu group	95.5	96.22	96.92	97.81	98.67	99.29
Control group	92.2	92.45	92.69	92.95	93.05	93.18
Difference	3.3	3.77	4.23*	4.86*	5.62*	6.11**

* $P<0.05$, ** $P<0.01$, *** $P<0.001$

H. Weight Score

Children in both the groups were having no significant difference in weight at baseline.

From second visit onwards it was seen that weight of children receiving SBP was more as compared to that of children not receiving SBP

Table 8: Comparison in Weight between SBP and Control groups

Weight	Visit 1	Visit 2	Visit 3	Visit 4	Visit 5	Visit 6
Suvarna Bindu group	12.5	13	13.3	13.1	13.6	13.98
Control group	11.6	11.9	12.2	12.4	12.5	12.83
Difference	-0.9	1.1**	1.1*	0.7	1.1*	1.15*

* $P<0.05$, ** $P<0.01$, *** $P<0.001$

Table 9: Comparison in Event Score between SBP and Control groups

	Group (n=20)	Baseline (a)	Post interventional (b)	Change score (Difference within groups b-a)		Difference in change score (between groups)	
				Mean difference (\pm SD)	P value *	Mean difference (\pm SE)	P value †
Frequency of illness	1	2.10 (\pm 0.8)	3.10 (\pm 0.8)	1 (\pm 1.3)	0.009	0.8(\pm 0.3)	0.043
	2	2.45 (\pm 1)	2.65 (\pm 1)	0.2 (\pm 1.05)	0.29		
Severity of illness	1	6.2 (\pm 1.5)	3.8 (\pm 1.5)	-2.35 (\pm 2.5)	0.002	-2.25 (\pm 0.6)	0.02
	2	4.95 (\pm 1.1)	4.85(1.7)	-0.1 (\pm 1.7)	0.77		
Duration of illness	1	2.1 (\pm 0.6)	1.4(\pm 0.5)	-0.7 (\pm 0.97)	0.013	-0.75 (\pm 2.9)	0.01
	2	1.65 (\pm 0.5)	1.7 (\pm 0.8)	0.05 (\pm 0.88)	0.75		

*- using Wilcoxon Signed Ranks Test, † - using Mann-Whitney U test

Table 10: Comparison in IQ Score between SBP and Control group

	Group	N	Baseline Mean \pm SD	Post interventional Mean \pm SD	Difference within group Mean \pm SD	Post interventional Difference between group Mean \pm SE
IQ Baseline	SBP	20	109.9 \pm 17.24	141.85 \pm 30.80	-31.95 \pm 26.54	24 \pm 6.27***
	Control	20	110.3 \pm 7.88	117.85 \pm 26.73	-7.55 \pm 9.07	

*P< 0.05, **P<0.01 ***P<0.001

I. Frequency of illness

- Statistically significant reduction in frequency of was seen in children receiving SBP.
- No difference was however seen in frequency of illness in children not receiving SBP.
- There was statistically significant difference in score of frequency of illness between the groups. (Table 8)

J. Severity of illness

- Significant reduction was also seen in score of severity of illness in children receiving SBP.
- No change was however seen in children not receiving SBP.
- There was statistically significant difference in score of severity of illness between the groups.
- The scores of severity of illness significantly reduce in SBP group compared to control group. (P<0.05) (Table 8)

K. Duration of illness

- Children receiving SBP showed significant reduction in Duration of illness.
- No significant change was however seen in children not receiving SBP.
- At the end of six month the scores of illness duration was significantly less in children receiving SBP as compared to that of children not receiving SBP. (Table 8)

IQ Score

Children in both the groups were having no significant difference in IQ score at baseline. On sixth month onwards it was see that IQ of children receiving SBP was more as compared to that of children not receiving SBP

Table 11: Comparison in immunoglobulin values in SBP group

	BT	AT
IgG	12.13	12.71
IgM	1.195	1.487
IgA	0.915	1.182

Immunoglobulin Values

- There was an increase in the mean levels of Immunoglobulin's (IgG, IgM, IgA) after six months of administration of SBP
- We could not analyse this data statistically because sample size too small as we could not obtain consent from parents for blood withdrawal.

DISCUSSION

Finding suggests that SBP plays a significant development in overall development of child. It was seen from the result of presented study that children taking SBP ones a month for six months showed reduction in overall complaint related to eating,

mood, behavior and other health related complaints causing limitation to parent in their daily routine.

Eating Complaint

The reduction in eating complaint score shows that the eating pattern in children taking SBP was improved. It may be due to the *Agnivardhaka* property of SBP. Classics also mentioned that SBP is *Agnivardhaka* and individual ingredient i.e. *Suvarna* and *Ghrita* stimulate *Agni*. This might have improved the eating capacity of the children.

Sleeping Complaint

The study showed that there was no significant difference in the scores of sleeping complaint between the groups. This means the sleeping complaint scores were equally reduced in both the groups. It shows that the SBP is not much effective on sleeping complaint.

Mood and Temperaments Complaint

The results suggests that parents of Children taking SBP has less complaints pertaining to the Moods and temperaments of their child. This indicates that children becomes more playfull and calm which could be an indicator of overall improvement in health of the child.

Behaviour Complaint

The study showed that there was reduction in behaviour complaint score in SBP group. It may be due to the *Medhya* property of SBP as classics have also mentioned that SBP is *Medhya*.

Total Complaint Score

Over all it was seen that , from second month onwards the total complaint score of children taking SBP was significantly less than of those not receiving SBP. Various factors like reduction in severity and frequency of illness, improvement in digestion and food intake and increase in positive moods in children would have contributed for the overall effect .

Growth of Children

Height and weight of SBP group children was increased when compare to control. It may be due to

Oja and *Balavardhan* properties of SBP.

Event of Illness

The study showed that there was reduced event of illness frequency, severity and duration in children receiving SBP as compared to those not receiving SBP. It may be due to *Vyadhikshamatva* properties of SBP.

CONCLUSION

Based upon the findings of the study it could be concluded that SBP could have a potential role in reducing various complaints related to child's health and behaviours. It may also have a beneficial effect in promoting immunity of the child as it was seen by reduction in severity and intensity of children. It also promotes overall growth of physical and mental growth of the child.

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