



“Effect of Kashyapokta Medhya compound in improving ‘IQ’ of school going children: randomized single blind clinical trial”

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Abstract-

Intellectual capability of children has naturally become matter of concern for the present society. About 10% of children in early school age performs poorly and have difficulty in learning academic skills. So dropout rate from school are commonly seen in developing countries like India. For this many factors are responsible among them low intelligence is important one. Ayurveda has a unique concept of *Medhajana*. Below average IQ child has impairment in over all levels of intelligence that is cognitive, language, motor and social abilities. Thus with the aim of assessing the effect of an Ayurvedic compound on them, this study was conducted. **Aims and Objectives is** To evaluate the efficacy of *Kashyapokta Medhya* compound in improving IQ of school going children.

Observations and Results: Group A (*Kashyapokta Medhya* compound) was much more significant in increasing the IQ score compared to placebo group B.

Conclusion: *Kashyapokta Medhya* compound improves the IQ in school going children.

Keywords: *IQ, Kashyapokta Medhya* compound.

Introduction-

Today’s era is of competition and in this competitive world everybody preparing their offspring’s as most competitive. The intellectual capacity of child is influenced by so many factors like health of parents and child, nutritional status of children, environment, life style etc.

Thus intellectual capability of children has naturally become matter of concern for the present society. About 10% of children in early school age performs poorly and have difficulty in learning academic skills¹. So dropout rate from school are commonly seen in children of developing countries like India. For this

many factors are responsible among them low intelligence is important one².

Ayurveda has a unique concept of Medhajanana. Many *Medhya dravyas* and *yogas* are prescribed for improving intelligence. Even though some studies are done on *Medhya dravya* but no research work has been done on the present study.

Below average IQ child has impairment in over all levels of intelligence that is cognitive, language, motor and social abilities. Thus with the aim of assessing the effect of an Ayurvedic compound on them, this study entitled “**Effect of *Kashyapokta Medhya* Compound in Improving ‘IQ’ Of School Going Children: Randomized Single Blind Clinical Trial**” was conducted.

This retrospective research work is based on the methodology of randomized single blind placebo control clinical trial. The comparison of the test drugs’ effect is made with a placebo Group.

In this study total of >330 subjects were screened by visiting different schools in and around Belgaum.

The review was done on the concepts of *Buddhi*, Intelligence and Modern & Ayurvedic approach to IQ in detail.

Materials and method-

Aims and Objectives of the study

To evaluate the efficacy of *Kashyapokta Medhya* compound in improving IQ of school going children.

Source of data

Children of either sex of 10 year age Group fulfilling the inclusion criteria were selected from schools of Belgaum.

Method of collection of Data

1. **Screening** -Children of different schools of Belgaum were subjected to CPM test and whose IQ was below average were selected.

2. **Quantification of intelligence quotient** - selected subjects were subjected to Seguin form board test to quantify the IQ. Those children whose IQ score was between 70-89 were included.

3. Other related relevant data of the subject was collected from teachers and parents through specially designed questionnaires.

4. **Segregation of children into Group A and B** -By random number table they were divided into two Groups namely Group A and Group B.

5 .Intervention by medication

Study Group (Group A) was administered *Kashyapokta Medhya* compound and control Group (Group B) was administered godhuma at the dose of 5 gm twice daily with honey and ghrut for 1 month.

6. **IQ assessment** – IQ was assessed by Seguin Form Board test and information was collected through questionnaires. Then result was interpreted scientifically.

Inclusion Criteria

1. Children aged 10 yr. (109 months to 120 months) of either sex were selected after screening.

2. IQ range between (70-89) i.e. below average.

Exclusion Criteria

1. Children with obvious congenital anomalies like cleft palate, CHD etc.

2. Children having known CNS disorders like cerebral palsy, mental retardation etc.
3. Children with known systemic disorders like tuberculosis, HIV etc and metabolic disorders.
4. Children with known chronic diseases like asthma, eczema etc.
5. Children who required hospitalization for any medical or surgical intervention were excluded.

Assessment Criteria

1. IQ assessment by Seguin form board test.
2. Parents and teachers interview with help of questionnaires.

Duration Of the study

Data was collected during the period of August 2011 to May 2013 by visiting various schools and examining the subjects. The total period of intervention was 1 month with pre and posttest design.

Drug Materials taken for the study include³

- Manjistha, Triphala, Atibala, Chitrak – were purchased from KLE Ayurved pharmacy, Belgaum.
- Brahmi -Brahmi was purchased from (Kottakaal Kerala) local market.
- Bala –Bala was collected from KLE herbal garden Narsingpur, Belgaum.
- Godhuma (Wheat grain), Ghrut, and Madhu–were purchased from Belgaum local market.

The entire drug were Authenticated in CRF Analytical laboratory of KLE'S Shri BMK Ayurveda Mahavidyalay Shahapur, Belgaum.

Drug Preparation –

Drug was prepared in KLE'S Ayurveda pharmacy Khasbhag, Belgaum. –

1. Manjistha, Triphala, Brahmi, Bala, Atibala, Chitrak were made into fine powder separately.
2. Then all the fine powders were mixed well in equal parts.
3. Godhum was made in to fine powder.
4. Packing and labeling was done according to randomization plan.

Assessment and Evaluation-

1. Assessment of IQ.
2. Evaluation of efficacy of Kashyapokta Medhya compound in improving IQ of below average school going children.

1. Assessment of IQ-

(A) Screening Test: CPM Screening Test⁴ designed by J C RAVENS was used to screen the children who come under suspicion Group of below average IQ. The scale consists of. This test contains sets A and B from the standard matrices, with a further set of 12 items inserted between the two, as set Ab.

(B) Seguin Form Board Test:⁵ Those who come under below average IQ level were put on SFB test to quantify the proper IQ .The “Seguin Form Board (SFB)” was used for assessment of IQ. This is the most commonly used test for measuring general intelligence in children between the age Group of 3 to 11 years. This board has ten wooden blocks of different shapes. While administering the test the blocks were taken out and stacked in front of the subject who had to put them back as quickly as he could. The task was

repeated three times consequently and the score was the time taken on the fastest trial. The score was compared with the SFB table to detect Mental Age. Depending on the Mental Age IQ was calculated according to the following formula

$$IQ = \left(\frac{\text{Mental Age}}{\text{Chronological Age}} \right) \times 100^6$$

Interpretation-

The IQ test result was distributed according to the following classification given by NIMH,

- >140 – Genius
- 125 to 139 – Very superior
- 110 to 124 – Superior
- 90 to 109 – Average
- 70 to 89 – Dull (below average)

Below 70 – Retarded

By using SFB test IQ was obtained and those subjects who scored 70 to 89 were included in the study. The SFB test was done pre and post to know the increase in IQ.

(C) **Questionnaires-** Other related relevant data of the subject were collected from teachers and parents through specially designed questionnaires.

2. Evaluation of the efficacy of Kashyapokta Medhya compound-A comparative study was designed with two Group comparisons and the study was carried out according to the plan of the study to assess the role of KMC in improving IQ.

Result-

Group A- Pre and post test results-

Table No1- showing pretest and post test result in Group A

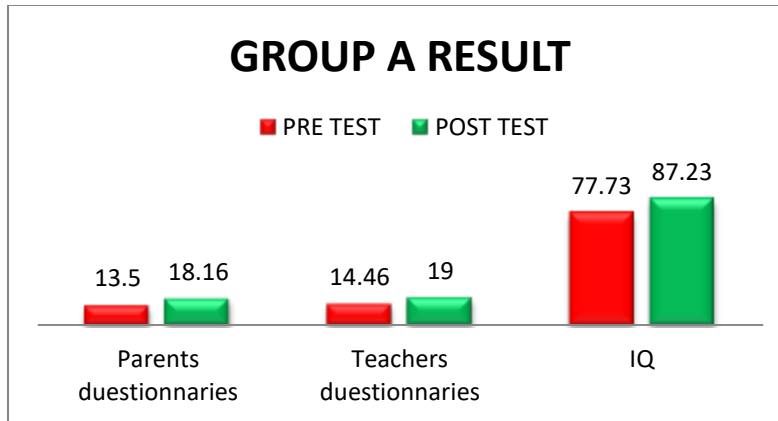
Group	Parents questionnaires		Teachers questionnaires		IQ score	
	Pre test mean score	Post test mean score	Pre test mean score	Post test mean score	Pre test mean score	Post test mean score
A	13.5	18.16	14.46	19	77.73	87.23

Table No 2- showing pretest and post test result with statistics in Group A

Assessment	Pre test	Post test	Mean of differences	SEM of differences	P value	Significance (P < 0.05)
Parents Questionnaires	13.5	18.16	4.667	0.5918	< 0.0001	Yes
Teachers questionnaires	14.46	19	4.533	0.5091	< 0.0001	Yes
IQ score	77.73	87.23	9.500	1.508	< 0.0001	Yes

P value is < 0.000 in all three assessments; Kashyapokta Medhya compound was significant in increasing the IQ in Group A.

Diagram No 1– Group A result pre test and post test in three assessments



Group B- Pre and post test results -

Table No 3- showing pre and post test results in Group B

Group	Parents questionnaires		Teachers questionnaires		IQ score	
	Pretest mean score	Posttest mean score	Pretest mean score	Posttest mean score	Pretest mean score	Posttest mean score
B	14.3	17.2	15.23	16.5	77.83	83.23

Table No 4- showing pre and post test results with statistics in Group B

Assessment	Pre test	Post test	Mean of differences	SD of differences	SEM of differences	P value	Significance (P < 0.05)
Parents Questionnaires	14.3	17.2	2.900	3.220	0.5879	0.0001	Yes
Teachers questionnaires	15.23	16.5	1.267	2.067	0.3773	0.0022	Yes
IQ score	77.83	83.23	2.733	4.631	0.8455	0.0030	Yes

P value is < 0.0001, 0.0022, and 0.0030 in all three assessments so; Group B was also significant in increasing the IQ score.

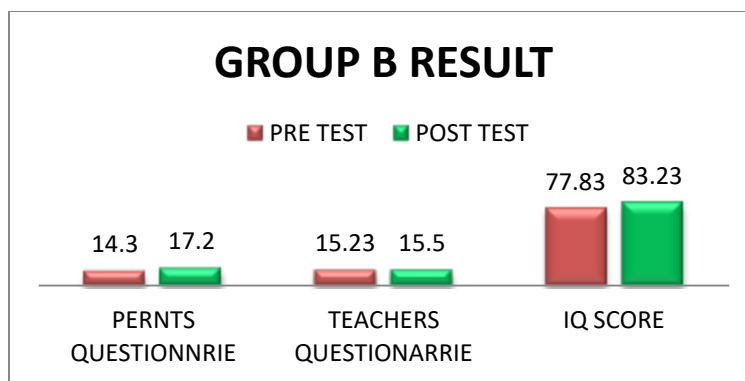
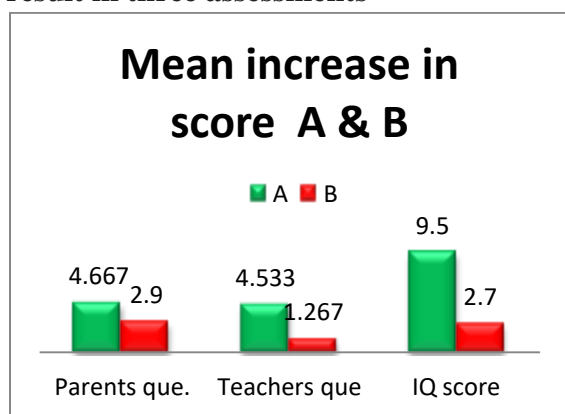


Diagram No 2 – Group B result pre test and post test in all three assessments Group A (Kashyapoktav Medhya compound) Vs. Group B (placebo) result- Table No 5- Group A Vs. Group B result

Assessment	Mean ± SEM	Mean ± SEM	t value	P value	P value summary	Significantly different? (P < 0.05)
Parents Questionnaires	4.667 ± 0.5918	2.900 ± 0.5879	2.118	<0.0385	*	Yes
Teachers questionnaires	4.533 ± 0.5091	1.267 ± 0.3773	5.155	< 0.0001	****	Yes
IQ score	9.500 ± 1.508	2.733 ± 0.8455	3.913	<0.0002	***	Yes

There was significant difference in between both the Groups. Group A was significant in increasing the IQ score compared to Group B in all three assessments.

Diagram No 3 – Group AVs.Group B result in three assessments



DISCUSSION: Discussion on the battery used for the Screening of below average IQ-

The CPM test used for assessment of IQ is a worldwide accepted scale. Thus the use of this scale was not question rising. Discussion on the scale used for the screening. This test was designed for the use with young children. The screening test used was developed by J. C Raven. This test is just a search light for identifying the range of IQ.

Discussion on the battery used for the assessment of IQ

Seguin Form Board was selected which is a standard tool for IQ assessment as well as looks like a play article, which as a matter of fact most of the children liked being administered. Thus the test in various

schools in and around Belgaum was administered without any difficulty and bias in mind.

Discussion on effect of intervention-

1. On overall I.Q.: The effect of Group A was highly significant ($P < 0.001$) on the overall I.Q. of the patients. In this Group the I.Q. was on an average increased by 12.86%. In Group B the mean I.Q. was increased by 05.40%. Statistically the result was significant ($P < 0.0030$).

The data reveals that an intervention of Kashyapokta Medhya compound and placebo given orally provided the improvement in I.Q. But compared with placebo KMC is better in improving IQ.

2. Parents questionnaire: In Group A the mean score was increased by 34.51% i.e. the results were significant ($P < 0.001$). In Group B overall score in questionnaires 20.27% which was also statistically significant ($p < 0.0022$), is calculated on the basis of a series of ten questionnaires. These questionnaires basically estimate the social competence, sleep, general awareness, commonsense, memory and mathematical proficiency of the child. The data thus reveals that Group A provided maximum improvement in the above mentioned mental capacities.

3. Teachers questionnaire. The specially designed questionnaires were based on a series of ten Questions which took into consideration the technical skills and reasoning of the child, ability to do homework, cognition, mathematical fluency, grasping power etc. In Group A an increase of 31.39% was observed, which is statistically significant ($p < 0.0001$). In Group B an increase of 8.33% was seen in

the mean teachers questionnaire score, which is statistically less significant ($p < 0.0030$). Thus it can be said that Kashyapokta Medhya compound and placebo given orally provided the improvement in I.Q. But compared with placebo KMC is better in improving scholastics performance.

PROBABLE MODE OF ACTION-

Kashyapokta Medhya Compound:

Manjistha-Manjistha is having *madhur rasa* so ultimately it is *shadendriya prasadak* also *madhur rasa* acts as *Medhya.R.cardifolia* exerts neuroprotection⁷ and weak nootropic activity⁸.

Triphala-Triphala is having *madhur rasa, madhur vipak* so it acts as a *Medhya*. Apart from that research shows that it is having antidepressant and memory enhancing activity⁹.

Brahmi-By virtue of *tikta rasa* and *prabhav* it acts as *Medhya*, recent research also proves that bacoside is useful for improving cognition, memory and intelligence^{10,11}.

Bala-It is having *madhur rasa* and *madhur vipak* so helpful in *Medhavardhan*. It is anti-oxidant, and it is successfully used in neurodegenerative disorders¹².

Atibala-Karma is same as *Bala*, roots and panchang acts as nervine tonic¹³.

Chitrak-It is *hrudya* so acts as an *indriya prasadaka*. Recent researches shows that it is having central nervous stimulating activity¹⁴. It is having *ushna virya*, so probably corrects the vitiated *kapha* and *vata* and promotes *alochaka and sadhaka pitta*.

Ghrut- The *ghruta* is *madhura rasa* dominant and thus acts as *sad indriya prasadaniya*. The base of the preparation is *ghruta* which is *dipana, pacana,*

Medhavardhaka thus it may also regulate *sadhaka* and *alochak pitta*. Since active ingredients are easily mixed and imbibed with *Ghrut*, they are easily digested and absorbed –The digestibility coefficient or rate of absorption is 96% which is the highest amongst all oils and fats. Lipophilic action of *Ghrut* facilitates transportation to a target organ and final delivery inside the cell, because cell membranes also contains lipid

Madhu-It is also acts as a *yogvahi* and palatability is increased because of *madhu* and *guruta*.

The mode of action of the drug may be, up to certain extent, understood on the basis of *rasa – pancaka* and its effect over the *agni* and *manovaha srotas*.

The KMC is *tikta* rasa dominant followed by *madhur rasa*. *Madhura rasa* is said to be '*sadindriya prasadaniya*' and must therefore have a direct effect over the site of these *indriyas* i.e. *sirah*. *Tikta rasa* by virtue of its *akasha* and *vayu mahabhutas*, *laghu guna*, *dipana*, *pacana* and *strotovisodhana karma* acts as *Medhya*.

The overall KMC is *ushna* virya predominant and hence probably acts by dispelling the *tamas* and vitiated *kapha* from *Hridaya* and *manovaha srotas*. It may also regulate the functions of *alochaka* and *sadhaka pitta*, thereby improving the *grahana shakti* and *Smrti*. The KMC is administered along with *madhu* and *ghrut*; also being *suksma*, it quickly reaches to *mastishka* and *Buddhindriya*, thus improving the intellect.

Iron, ascorbic acid, phosphate and sulphate were found in finished product

analysis. Recent research shows that these nutrients have direct positive impact on cognition.

Conclusion-

❖ There was significant difference in between both the Groups. But Group A (*Kashyapokta Medhya* compound) was significant in increasing the IQ score compared to Group B (Placebo).

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