Clinical Research

A clinical study of Ashwagandha ghrita and Ashwagandha granules for its Brumhana and Balya effect

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Abstract

Good nutrition is the cornerstone of long life, good health, and proper development. Well-nourished children perform well in school, grow into healthy adults and, in turn, give their children a better start in life. Malnutrition, however, continues to be a significant problem, especially among children who can not fend adequately for themselves. Either due to various diseases or due to excessive indulgence in Karshyakara Nidanas pathological changes occur in the body, leading to manifestation of Karshya; in such situations, Brumhana therapy is indicated. This study was planned to evaluate the drug Ashwagandha for its Brumhana effect in children. A total 121 children were enrolled in the study, of which 111 completed the full course of treatment. The children were randomly separated into three groups; groups A (Ashwagandha ghrita), B (Ashwagandha granules), and C (Placebo). The improvement was maximum in group A, i.e., the subjects receiving Ashwagandha Ghrita. However, childhood is a period of growth and therefore all the children responded to the therapy to some extent. There was good relief of the chief complaints and a trend for improvement was seen in supplementary parameters also.

Key words: Ashwagandha ghrita, Ashwagandha granules, balya, brumhana

Introduction

Acharya Charaka has described the many features of Samyak Brumhana, in which Bala is the first one to be mentioned. The term Bala, literally means power, strength, might, vigor, force, or vitality. Charaka has also stated that the maintenance of health entirely depends upon the Bala. Acharya Sushruta says that a patient whose Bala has been extremely reduced becomes incapable of being treated. Thus, in a broad sense, Bala can be described as the inherent or acquired strength that aids in the maintenance of health and the sustenance of life. Every human is born with a potential for a certain amount of strength, and this can be realized through regular physical exercise and healthy living. It is vital to understand the various aspects of Bala so that the inborn potential can be fully realized. From the above it can be inferred that Bala is the power to exercise control over the harmful activities of Dosha that resides in every Dhatu of the body. The state of an individual’s Bala can be understood through two Lakshanas: the first is Upachaya, which means the build, stability, and compactness of the body, and second one is Shakti, which refers to the capability to do hard work. Brumhana is the most commonly used word for Bala. All the classical writers in general, and Dalhana in particular, have defined Brumhana as the enhancer of the bulk of the body. The Upachaya type of Bala mainly comprises Somatmaka properties like Snigdha, Shukla, Drava etc., by virtue of which the body exhibits stability and compactness, which is nothing but Brumhana. With regard to Brumhana, Charaka described a clear-cut method of treatment that is intended to impart qualitative and quantitative improvement to the bodily elements. In Ashtanga Hridaya, while commenting on Guru Guna, Hemadri describes it as the quality which imparts Brumhana to the body, from this it is again clear that Brumhana possesses predominantly Guru Guna. In this study an effort is made to study Brumhana and Balya effect. The study was planned to clinically evaluate Ashwagandha Ghrita and Ashwagandha granules for their Brumhana and Balya effect.

Materials and Methods

The drugs

Two preparations of Ashwagandha, a drug known for its Brumhana action, were selected for the study; the dose, grouping, Anupana, etc. are given in Table 1.
Criteria for selection of children
Children between 3 years and 12 years, irrespective of caste, religion, sex, occupation etc. and those having classical symptoms of Krisha (Shuska Sphik-Udar-Greeva, Dhamani-Jal-Darshana, and Sthula Parva) or, according to modern terminology, aerobic capacity, body composition (as assessed by skin-fold thickness), and muscular strength were selected from out patient department of Kaumarabhritya, Institute for Post Graduate Teaching and Research in Ayurveda, Gujarat Ayurved University, Jamnagar.

Criteria of exclusion
Children having any complications (e.g., HIV, hepatitis B, or other viral diseases) chronic illness, hereditary disease, lower than 5th degree of malnutrition, etc. were excluded.

Investigations
Routine blood, urine, and stool examinations were carried out in all patients to rule out any illness.

Criteria of assessment
In Ayurveda the following parameters were taken into consideration to select the children in need of Brumhana therapy: Shuska Sphik-Udar-Greeva, Dhamani Jala Darshana, Sthula parva, etc. (or, in modern terminology, aerobic capacity, body composition, and muscular strength.

To assess the aerobic capacity, the children were instructed to perform a modified method of pranayama and chest circumference was measured in Puraka, Kumbhaka and Rechaka states of respiration. Body composition was assessed by measuring biceps, triceps, and gluteus skin fold thickness on the left side using Harpenden skinfold calipers. Muscular strength, endurance, and flexibility were assessed in the positions of curl-up, push-up, extended and flexed arm hang, shoulder stretch, and weight-bearing capacity.

Observations
A total of 121 children in the age-group of 3–12 years were registered for this study designed to evaluate the Brumhana effect of Ashwagandha Ghrita and Ashwagandha granules. Out of the 121 children, 111 completed treatment. The study participants were randomly separated into three groups. In group A (n=51), Ashwagandha Ghrita was administered; 41 of these 51 children completed the course of treatment. In group B (n=36), Ashwagandha granules were administered. In group C (n=34), the children received the placebo capsule (capsules filled with Bengal gram powder). All children in groups B and C completed the respective course of treatment.

In the present study, 49.59% children belonged to the 10–12 year age-group, 35.54% to the 7–9 year age-group, and 14.88% children to the age-group of 3–6 years. Among the study subjects, 97.52% were Hindus and 78.38% were boys. Of the children, 32.23% were in secondary school, 28.93% in upper primary, 23.14% in lower primary, and 10.74% in nursery school; 4.96% of children were preschoolers. We also assessed their dietary habits and found that 85.95% children were having a regular diet; 59.50% children were having Krura Kostha and 34.71% Mridu Kostha; 66.12% children were having Avara Abhyavaharana Shakti, while 28.93% of children were having Madhyaama Abhyavaharan Shakti. Nail biting was prevalent in 23.14%, pica in 16.53%, and thumb-sucking in 10.74%; 6.61% children had the habit of wiping of the nose. In Aharaja Nidana, 47.9% of children were taking ruksha ahara, 35.5% Pramitashanam, 24.8% were taking Vataha Ahara, while Anashana, Langhana, and Upvasha were observed in 11.6%, 8.26%, and 7.43% of children, respectively. Most of the children (78.5%) were underweight; 76.03% complained of poor appetite, 69.4% had Dourbalya, and 63.6% complained of having cramps in the legs. The 49.6% complained of fatigue, 10.7% had wrinkles on their faces, 4.13% had stomatitis, and 4.95% had cheilosis. Agni was Manda in 59.50%, whereas it was Vishana in 31.40%. With regard to the type of diet, 62.81% children were in the habit of taking Madhura Rasa Pradhana food, 22.31% were taking Amla Rasa Pradhana food, 21.49% were taking Lavana Rasa Pradhana food, while 20.66% children were taking Kashaya and Katu Rasa Pradhana food in their daily diet. Maximum 66.94% children were of Vatapitta Prakriti, and 68.6% were having Avara Samhanana. The 58.6% children were noted to Avara Pramaṇa, while Pittavahhasata was observed in 6.6% of children, 76% were having Arochaka, and Dourbalya was observed in 69.4% of children.

Results
The 111 children who completed treatment were divided into three groups. The effect of therapy on various parameters is shown in tables 2 to 9.

With regard to the effect of Puraka, Kumbhaka, and Rechaka...
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Table 3: Effect of therapy on Purak, Kumbhak, and Rechak level (a kind of pranayam) in 111 children

|   | n | Mean score (BT) | Mean score (AT) | Mean difference | % | SD  | SE  | t    | P value |
|---|---|----------------|----------------|----------------|---|-----|-----|------|---------|
| Purak |   |                |                |                |   |     |     |      |         |
| A   | 41 | 1.26           | 2.17           | 0.90           | 71.15 | 0.76 | 0.11 | 7.52 | <.001   |
| B   | 36 | 1.16           | 1.66           | 0.5            | 42.85 | 0.56 | 0.09 | 5.35 | <.001   |
| C   | 34 | 1.35           | 1.61           | 0.26           | 19.56 | 0.51 | 0.08 | 3.02 | <.01    |
| Kumbhak |   |                |                |                |   |     |     |      |         |
| A   | 41 | 1.34           | 2.29           | 0.95           | 70.90 | 0.89 | 0.13 | 6.82 | <.001   |
| B   | 36 | 0.94           | 1.36           | 0.41           | 44.11 | 0.5  | 0.08 | 5.0  | <.001   |
| C   | 34 | 1.02           | 1.35           | 0.32           | 31.42 | 0.47 | 0.08 | 3.97 | <.001   |
| Rechak |   |                |                |                |   |     |     |      |         |
| A   | 41 | 1.26           | 2.09           | 0.82           | 65.38 | 0.66 | 0.10 | 7.95 | <.001   |
| B   | 36 | 1.05           | 1.55           | 0.5            | 47.36 | 0.60 | 0.10 | 5.91 | <.001   |
| C   | 34 | 1.26           | 1.58           | 0.32           | 25.58 | 0.47 | 0.08 | 3.97 | <.001   |

Table 4: Effect of therapy on neck and abdomen circumference (griva-udar) in 111 children (cm)

|   | n | Mean score (BT) | Mean score (AT) | Mean difference | % | SD  | SE  | t    | P value |
|---|---|----------------|----------------|----------------|---|-----|-----|------|---------|
| Neck circumference |   |                |                |                |   |     |     |      |         |
| A   | 41 | 21.96          | 23.07          | 1.10           | 5.05 | 0.48 | 0.07 | 14.8 | <.001   |
| B   | 36 | 22.25          | 23.20          | 0.96           | 4.30 | 0.60 | 0.10 | 9.55  | <.001   |
| C   | 34 | 22.29          | 23.08          | 0.79           | 3.56 | 0.53 | 0.09 | 8.60  | <.001   |
| Abdominal circumference |   |                |                |                |   |     |     |      |         |
| A   | 41 | 51.73          | 52.35          | 0.62           | 1.20 | 0.56 | 0.08 | 7.01  | <.001   |
| B   | 36 | 54.52          | 55.0           | 0.47           | 0.86 | 0.47 | 0.07 | 5.93  | <.001   |
| C   | 34 | 54.76          | 55.04          | 0.27           | 0.51 | 0.33 | 0.05 | 4.93  | <.001   |

Table 5: Effect of therapy on Dhamani–Jal–Darshana in 111 children

|   | n | Mean score (BT) | Mean score (AT) | Mean difference | % | SD  | SE  | t    | P value |
|---|---|----------------|----------------|----------------|---|-----|-----|------|---------|
| Dhamani-Jal- Darshan |   |                |                |                |   |     |     |      |         |
| A   | 41 | 1.26           | 2.07           | 0.80           | 63.46 | 0.71 | 0.11 | 7.20 | <001    |
| B   | 36 | 1.5            | 2.02           | 0.52           | 35.18 | 0.50 | 0.08 | 6.25 | <.001   |
| C   | 34 | 1.38           | 1.91           | 0.53           | 38.29 | 0.50 | 0.08 | 6.09 | <.001   |

Table 6: Effect of therapy on Sthula Parva in 111 children

|   | n | Mean score (BT) | Mean score (AT) | Mean difference | % | SD  | SE  | t    | P value |
|---|---|----------------|----------------|----------------|---|-----|-----|------|---------|
| Sthula-parva |   |                |                |                |   |     |     |      |         |
| A   | 41 | 1.46           | 1.97           | 0.51           | 35.00 | 0.67 | 0.10 | 4.85 | <.001   |
| B   | 36 | 1.30           | 1.77           | 0.47           | 36.17 | 0.50 | 0.08 | 5.59 | <.001   |
| C   | 34 | 1.55           | 1.79           | 0.23           | 15.09 | 0.55 | 0.09 | 2.47 | <.05    |

therapy, all groups showed highly significant result at $P<.001$, though the percentage of improvement was better in group A [Table 3]. On the evaluation of the effect of therapy on neck and abdomen circumference, a highly significant result was found in all groups; the percentage of improvement was found as sequence in A, B, C [Table 4]. With regard to the effect of therapy on Dhamani-jala-darshana, all the three groups showed highly significant result at $P<.001$, though the percentage of improvement was highest in group A, i.e., Aswagandha Ghrita. [Table 5]. With regard to the effect of therapy on Sthula Parva, groups A and B showed highly significant result at $P<.001$, while group C showed significant result at $P<.05$ [Table 6]. Analysis of the effect of therapy on the buccal pad of fat showed that in groups A and B there was highly significant
Table 7: Effect of therapy on buccal pad of fat in 111 children

|       | n  | Mean score (BT) | Mean score (AT) | Mean difference | %   | SD  | SE  | t    | P value |
|-------|----|-----------------|-----------------|-----------------|-----|-----|-----|------|---------|
| A     | 41 | 1.34            | 1.87            | 0.53            | 40.0| 0.63| 0.09| 5.39 | <.001   |
| B     | 36 | 1.19            | 1.58            | 0.38            | 32.55| 0.49| 0.08| 4.71 | <.001   |
| C     | 34 | 1.58            | 1.73            | 0.14            | 9.25 | 0.50| 0.08| 1.71 | >.10    |

Table 8: Effect of therapy on skin fold thickness measurement (cm) in 111 children

|                       | n  | Mean score (BT) | Mean score (AT) | Mean difference | %   | SD  | SE  | t    | P value |
|-----------------------|----|-----------------|-----------------|-----------------|-----|-----|-----|------|---------|
| Biceps skin fold thickness | A  | 5.02            | 5.39            | 0.36            | 7.28| 0.22| 0.03| 10.44| <.001   |
|                        | B  | 4.93            | 5.38            | 0.50            | 10.14| 0.34| 0.05| 8.67 | <.001   |
|                        | C  | 4.83            | 5.11            | 0.27            | 5.77 | 0.25| 0.04| 6.46 | <.001   |
| Triceps skin fold thickness | A  | 5.87            | 6.29            | 0.41            | 7.05 | 0.19| 0.02| 13.93| <.001   |
|                        | B  | 5.69            | 6.16            | 0.47            | 8.29 | 0.23| 0.03| 11.93| <.001   |
|                        | C  | 5.57            | 5.89            | 0.32            | 5.80 | 0.24| 0.04| 7.77 | <.001   |
| Gluteus skin fold thickness | A  | 7.41            | 7.86            | 0.45            | 6.08 | 0.26| 0.04| 10.72| <.001   |
|                        | B  | 7.5             | 7.97            | 0.47            | 6.29 | 0.29| 0.04| 9.72 | <.001   |
|                        | C  | 7.0             | 7.32            | 0.32            | 4.62 | 0.24| 0.07| 6.93 | <.001   |

Table 9: Effect of treatment on muscular strength and endurance

|                      | n  | Mean score (BT) | Mean score (AT) | Mean difference | %   | SD  | SE  | t    | P value |
|----------------------|----|-----------------|-----------------|-----------------|-----|-----|-----|------|---------|
| Curl-up              | A  | 1.17            | 1.63            | 0.46            | 39.58| 0.83| 0.13| 3.53 | <.001   |
|                      | B  | 1.5             | 2.08            | 0.58            | 38.88| 0.5 | 0.08| 7.0  | <.001   |
|                      | C  | 1.20            | 1.61            | 0.41            | 34.14| 0.49| 0.08| 4.80 | <.001   |
| S. flexed Arm        | A  | 1.12            | 1.68            | 0.56            | 50.0 | 0.54| 0.08| 6.53 | <.001   |
|                      | B  | 1.80            | 2.02            | 0.22            | 12.3 | 0.72| 0.12| 1.84 | >.10    |
|                      | C  | 1.29            | 1.52            | 0.23            | 18.2 | 0.49| 0.08| 2.76 | <.01    |
| Shoulder stretch     | A  | 0.95            | 1.29            | 0.34            | 35.89| 0.65| 0.10| 3.33 | <.01    |
|                      | B  | 1.77            | 2.02            | 0.25            | 14.06| 0.73| 0.12| 2.04 | <.05    |
|                      | C  | 1.29            | 1.55            | 0.26            | 20.45| 0.44| 0.07| 3.44 | <.01    |
| Push-up              | A  | 0.63            | 0.78            | 0.14            | 23.07| 0.52| 0.08| 1.77 | >.10    |
|                      | B  | 0.97            | 1.22            | 0.25            | 25.71| 0.69| 0.11| 2.16 | <.05    |
|                      | C  | 1.17            | 1.32            | 0.14            | 12.5 | 0.43| 0.07| 1.96 | >.10    |
| Weight bearing       | A  | 0.90            | 1.09            | 0.19            | 21.62| 0.45| 0.07| 2.72 | <.01    |
|                      | B  | 1.88            | 1.97            | 0.08            | 4.41 | 0.5 | 0.08| 1    | >.10    |
|                      | C  | 1.29            | 1.44            | 0.14            | 11.36| 0.35| 0.06| 2.38 | <.05    |

result at $P<.001$; in group C the result was insignificant at $P>.10$. [Table 7]. With therapy there was highly significant increase of biceps, triceps, and gluteus skin fold thickness ($P<.001$) in all three groups [Table 8].

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Overall, none of the groups showed marked improvement. Only 22.22% improvement was seen in group A (Ashwagandha Ghrita). Mild improvement was seen in 38.88% in group A, in 50.00% in group B, and in 27.78% in group C; 38.88% in group A, 50.00% in group B, and 72.22 in group C showed no significant change and were classified as ‘unchanged.’

The overall effect of therapy in the three groups show that group A, wherein Ashwagandha Ghrita was given, showed 34.97% of improvement in all the 18 cardinal symptoms, whereas 23.72% improvement was observed in group B where Ashwagandha granules were administered. Group C, the placebo-treated group, showed 16.99% improvement. This shows that the Ashwagandha Ghrita is more effective than Ashwagandha granules and placebo.

Discussion

In the present study two pharmaceutical forms of Ashwagandha were used: a Ghrita form and a granule form. To rule out any placebo effect a separate placebo group was also maintained in the study. All children were exposed to natural surroundings and uniform care and advised to follow a uniform diet pattern. As shown above, the Ashwagandha Ghrita–treated group showed better results in all the parameters.

All the selected children were advised a simple method of Pranayama. On analysis, we found that the both the test drug formulations produced some improvement, i.e. had a beneficial effect, but the Ghrita form showed better performance, viz, in Puraka, Kumbhaka, and Rechaka levels.

The benefit documented is due to increase in inner strength and ventilation. The drug contains natural steroids that enhances the protein synthesis, and lipophilic activity that allows it to penetrate the cell membranes. An increase in the capacity of internal organs too could be seen, with the increase in the power of lungs probably caused by increased amounts of alveolar line protein of lungs. To put it another way, Ashwagandha contains alkaloids and steroids and Ghrita has Yogavahi & Samakaranavarti properties, and these are all responsible for the increase in body mass. It is well known that the neck and the abdomen are preferred sites for fat deposition and that is why a highly significant result was achieved by Ashwagandha Ghrita. The buccal pad of fat is also a site of fat deposition and that is why a highly significant result was achieved by all the groups. More protein content is found in Ghrita preparation and particularly with anoloids which are believed to interact with the liver protein synthesis activity and thus influence many modular proteins. The drug Ghrita contains phospholipids and fatty acids which may have promoted increased protein synthesis. This may have been responsible for the increase in skin-fold thickness and resulted in disappearance of Dhmani Jala Darshana. Likewise, the improvement in the buccal pad of fat. This itself proves the therapeutic efficacy of the formulation.

The parameters adopted from modern aspect to assess the Brumhana effect were physical activity, muscle strength and endurance. This may influence the improvement in muscle tone, strength & activeness & thus reduces the weakness of the muscles. Improved performance of physical activity was found in all the children due to daily exercise related activities. Features such as weakness and muscle cramps were markedly reduced, because of increased muscular ability, and it was observed in the present study that group A showed greater improvement than groups B and C. In a nut shell, muscle strength and endurance exercise improves muscle tone and it results into firmness of muscle.

Conclusion

Overall, the results of this study indicate a significant Brumhana effect in group A. The inference here is that in Krishna children (Shushka Sphik-Udar-Greeva and Dhamani-Jal-Darshana), it is better to use the drug in Ghrita form for better clinical response.

Childhood is a period of growth and Brumhanyya drugs potentiate and increase the plumpness of body, as is evident from the significant improvement in most of the parameters in the present study. It may be difficult to give a definite conclusion here based on clinical significance alone due to difference in these data. Group A showed a better response than group B, which clearly indicates the superiority of Ashwagandha Ghrita as far as Brumhana activity is concerned.

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अश्वगंधा के बुंधन एवं बल्य प्रभाव का अध्ययन

राजेशकुमार मिश्रा ऋजुता त्रिवेदी मीरा पण्ड्या

आज के और नवी पीढ़ी के अतिरिक्त को बनाये रखने हेतु, तथा उनके स्वास्थ्य और विकास के लिये अच्छा भोजन एक आदर्श है। अच्छे ढंग से पोषित बच्चे धारत ये अच्छा परिस्थिति करते हैं और स्वस्थ युगा के रूप में बढ़ते हैं। इसलिये अपने बच्चों को अच्छे जीवन देना, कारण कि कुर्योक्षण एक प्रभावी समस्या हैं, मुख्य रूप से उन बच्चों के लिये जो अपनी समृतिदेवी देखभाल नहीं करते हैं। अनेक प्रकार की बीमारीया या कार्यकर्ता विवरण के कारण शरीर में बदलाव होकर विकृति उत्पन्न होती है, जिसके फलस्वरूप काश्य प्राप्ति स्थानमाध्यम करता है जिसके लिये बूंधन का वहन है। यहीं अध्ययन बुंधन व बल्य प्रभाव को ध्यान में रखकर किया गया है और इसमें अधिक अश्वगंधा का उपयोग व्यक्ति के बुंधन के लिये किया गया है। इस अध्ययन में कुल 121 बच्चे नियंत्रित किये गये हैं। जिसमें से 119 की विकृतिस्वरूप हुई है और सभी बच्चे अविरल रूप से तीन भागों में बांट गये हैं जो इस प्रकार हैं: वर्ग अ (अश्वगंधा घूं), व (अश्वगंधा फ्रेजुल्स), व्य (ज्योतिबो)। व्यापन की ये अवस्था बढ़ने की अवस्था है, इसलिये सभी बच्चे इससे लोक या व्यापार प्रभावित हुए हैं। जबकि व्यापार प्रभाव वर्ग-अ में देखा गया है जो अच्छा प्रभाव दिखाता है, साथ में अन्य सहायक मापदंडों में भी इसका अच्छा प्रभाव देखा गया है।