

## Clinical evaluation of Chocoherb Granules in Human Immunodeficiency Virus Infected teenagers

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### Abstract:

The relationship between nutrition and human immunodeficiency virus (HIV) is a vicious cycle. HIV compromises nutritional status, and poor nutrition further weakens the immune system, increasing susceptibility to opportunistic infections. The study has been planned with aim to provide sufficient nutrition to malnourished HIV infected children via safe, effective, curative herbs which ensure well nourishments, boosts immunity, increases intellectual and restores the sickness to health and to evaluate the efficacy of Chocoherb granules in malnourished HIV infected children.

The *Ayurvedic* herbal product named Chocoherb is administered to HIV infected teenagers of age group between 11 to 18 years for 3 months under Civil Hospital - Rajkot Gujarat living with HIV. Chocoherb (Chocolate flavored granules with herbal extract in 10 gms. Individual sachet) twice daily with plain water. In present study, total 20 HIV infected teenagers of age group between 11 to 18 years were observed for weight improvement 1.45 % ( $p < 0.05$ ), height improvement 0.28 % ( $p < 0.05$ ), improvement in BMI 1.16% ( $p < 0.01$ ) and in CD4 count -0.18 % ( $p > 0.05$ ). The overall therapy shows improving in general health status of malnourished HIV infected teenagers.

**Key words:** Ayurvedic granules, BMI, Herbal product, HIV infection

Received: 14.10.2020

Revised: 18.12.2020

Accepted: 28.12.2020

Quick Response code



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**Introduction:**

The World Bank estimates that India is one of the highest ranking countries in the world for the number of children suffering from malnutrition. The prevalence of underweight children in India is among the highest in the world.<sup>[1]</sup> Food is any nutritious substance that people or animals eat or drink, or that plants absorb, in order to maintain life and growth. Without adequate nutrition the human body does not function optimally, and severe nutritional inadequacy can lead to disease. Good nutrition provides a mechanism to promote health and prevent disease.

It is estimated that over 23 million people worldwide are having HIV infection and of which over 8.1 million people have developed acquired immunodeficiency syndrome (AIDS). The situation is going to be worse in coming years. India is having largest number of HIV infected cases in South Asia<sup>[2]</sup> Good nutrition is very essential for patients with HIV infection. HIV effects patient's appetites, make food taste bad, or make it harder for your body to absorb nutrients. Symptoms like nausea and mouth sores can make eating unpleasant. These all lead weight loss and decrease body mass index (BMI) of individual. Malnutrition is upshot progression of HIV disease and a consequence of HIV infection and as well it's also associated with reduced T-cell proliferative responses. Nutrients play important roles in maintaining immune function especially when immunocompromised patients like HIV infection.

Nowadays Ayurveda recommended at every aspect, Ayurvedic medicines have given effect to HIV infection patients<sup>[3]</sup>, here we also introduced an ayurvedic

product for immunocompromised patients like HIV infection. In this study we have approach to HIV infected teenagers for ayurvedic herbal product chocoherb at the civil hospital, Rajkot.

Chocoherb is an *ayurvedic* preparation with herbal drugs like, *Ashwagandha*, *Shatavari*, *Vidarikanda*, *Bramhi*, etc. as per mentioned in Table No 1 with chocolate flavour. It's a classical reference for this preparation taken from *Aryabhisaka*.<sup>[4]</sup>

The study has been planned with aim to provide sufficient nutrition to malnourished HIV infected children via safe, effective, curative herbs which ensure well nourishments, boosts immunity, increases intellectual and restores the sickness to health and to evaluate the efficacy of Chocoherb granules in malnourished HIV infected children.

**Materials and methods:****Selection of the Patients:**

Total voluntary 20 children who have HIV infection are selected for open randomized study at Civil Hospital, Rajkot, Gujarat (Gujarat State AIDS Control Society) and Gujarat State Network of people living with HIV (GSNP) from July 2019 to Sept 2019.

**Inclusion:**

HIV infected children without symptoms and diagnosed since birth as either parents are infected from HIV; Underweight according to standard BMI measurement, and age between 11 to 18 years irrespective of caste, religion, sex etc.

**Exclusion:**

Major illness like insulin-dependent diabetes mellitus (IDDM), Tuberculosis (TB), Malignancy etc., congenital

anomaly, age below 11 years and above 18 years were excluded and patient unwilling to participate in the study was excluded from study.

#### Anthropometric measurement:

BMI (Body Mass Index) = Weight in kilograms/height in meter square' patient measuring BMI < 18.5 should be taken as underweight (according to WHO). The height (in meter) and weight (in kilograms) are taken with the person standing upright, with arms hanging down loosely.

#### Laboratory:

Before treatment complete blood count, urine routine & micro, and stool routine & micro examinations were carried out in all patients to rule out any illness except HIV infection. Before and after treatment CD4 count Test was conducted.

#### Use of Drug:

Chocoherbs granules – an Ayurvedic formulation (Table 1), prepared at Jishan Herbal, a Good manufacturing practices (GMP) certified ayurvedic manufacturing unit, Rajkot.

#### Dosage and Duration of Drug:

Chocoherb - Chocolate flavored granules

10 gm, twice a day by orally dosage for a period of 90 days along twice daily after meal with plain water. During the study allopathic treatment was continued for HIV as advised by physician according to guidelines of Gujarat State AIDS Control Society.

**Follow Up:** After each 30 days for a period of 3 months.

#### Observation and results:

A total of 20 HIV infected children in the age-group of 11–18 years were registered for this study designed to evaluate the effect of Chocoherb granules. All of them completed their treatment. In this present study, total 50% patients are male and remaining female. Among them 85% are Hindu and remaining are from other casts. The result of this preliminary study observed for weight improvement 1.45 % ( $p < 0.05$  significant), height improvement 0.28 % ( $p < 0.05$  significant), and improvement in BMI 1.16% ( $P < 0.01$  significant). Non-significant ( $p > 0.05$  non-significant) difference was found in CD4 count (-0.18 %) (Table 2).

**Table 1: Ingredients of Chocoherbs granules – an Ayurvedic formulation.<sup>[8]</sup>**

Herbal ingredients	Botanical Name	Used part	Karma- Pharmacological Action
<i>Aswagandha Ext.</i>	<i>Withania somnifera</i> Linn. Dunal	Root	<i>Balya, Rasayan,</i>
<i>Satavari Ext.</i>	<i>Asparagus racemosus</i> Willd	Root	<i>Rasayan, Medhya, Balya</i>
<i>Vidarikanda Ext.</i>	<i>Pueraria tuberosa</i> DC.	Tuber root	<i>Brihman, Dahhara, Balya</i>
<i>Brahmi Ext.</i>	<i>Bacopa monneri</i> (Linn.) Pennell	Whole plant	<i>Medhya, Rasayana,</i>
<i>Vaca</i>	<i>Acorus calamus</i> Linn.	Rhizome	<i>Dipan, Pacana, Medhya,</i>
<i>Jyotismati</i>	<i>Celastrus paniculatus</i> Willd	Seed	<i>Medya, Buddhi-Vardhaka, Swedajanana, Balya, Dipana</i>

<i>Shankhapuspi Ext.</i>	<i>Convolvulus pluricaulis</i> Chois.	Whole plant	<i>Rasayan, Medhya, Smritivardhaka, Balya</i>
<i>Bhringaraja</i>	<i>Eclipta alba</i> Hassk.	Whole plant	<i>Kesya, Krimighna, Rasayan, Balya</i>
<i>Kumari Ext.</i>	<i>Aloe vera</i> Tourn. ex. Linn	Leaves	<i>Rasayan, Balya</i>
<i>Punarnava Ext.</i>	<i>Boerhavia diffusa</i> Linn.	Root	<i>Dipana, Sophahara, Sulahara</i>
<i>Gokshur Ext.</i>	<i>Tribulus terrestris</i> Linn.	Fruits	<i>Dipana, Balya</i>
<i>Tulasi</i>	<i>Ocimum sanctum</i> Linn.	Whole plant	<i>Dipana, Balya</i>
<i>Pippali,</i>	<i>Piper longum</i> Linn.	Fruits	<i>Dipana, Visaghna</i>
<i>Maricha</i>	<i>Piper nigrum</i> Linn,	Fruits	<i>Dipana, Rasayana, Swashara, Kasahara</i>
<i>Dakshini Thor</i>	<i>Opuntia dilenil</i> (Ker-Gawl.) Haw.	Fruits	<i>Dipana, Balya</i>
<i>Gajar</i>	<i>Daucus carota</i> Subps. sativus	Tuber root	<i>Dipana, Krimighna</i>
<i>Bhoi Mug</i>	<i>Arachis hypogaea</i> L.	De-oiled seeds	<i>Balya, Bruhaniya</i>
Excipients			
Chocolate Flavor			

**Table 2: Statistical analysis:**

Parameters	Mean BT (n=20)	Mean AT (n=20)	Relief %	SD	SE	P Value	Significance
Weight	32.67	33.15	1.45 %	1.125	0.252	<0.05	significant
Height	142.75	143.15	0.28 %	0.681	0.152	<0.05	significant
BMI	17.64	17.84	1.16%	0.611	0.137	<0.01	significant
CD4 Count	876.50	874.95	-0.18 %	148.2	33.14	>0.05	non – significant

### Discussion:

Generally, HIV patients eat less food due to secondary opportunistic infections that reduce their appetite and result in weight loss. Inadequate food intake is one of the causes of malnutrition and this status is

strongly associated with progression to HIV-infected patients. Malnutrition & HIV infection both show weight loss and make the condition worst thus, malnourished HIV infected children requires greater attention and care for

these patients. In such conditions, Chocoherb granules have such properties to give proper nutrition, strength, immunity buster which helps to restore health.

Ayurvedic medicinal plants/herbs are natural source of medicines which provides good health and immune system. Preparation of Chocoherb granules are presence of various herbal drugs. Each drug works as per its properties like, *Rasa, Guna, Virya, Vipaka, Prabhava, Karma* etc.

*Shatavri, Vidarikanda, Gokshura, Bhoimug* etc. have *Madhura Rasa, Guru-Shingdha Guna, Madhur Vipaka* properties which give *Balya* (boost immunity) & *Bruhaniya* (well nutrient) effects. *Ashvagandha* have *Tikta-Kashya Rasa, Madhur Vipaka, Ushna Virya* with *Rasayana* (restores health), *Balya* (boost immunity), *Bruhaniya* (well nutrient) effects as well. *Pippai, Marich, Tulsi* have *Katu Rasa, Laghu Guna* so its gives *Dipana-Pachana* effects which cares for digestive system effectively. *Bramhi, Sankhapushpi, Vacha* etc have *Tikta-Kashaya Rasa, Madhur Virya, Sheeta Vipaka* with *Medhya* (increase intellectual) effect; *Jyotishmati* have *Katu-Tikta Rasa, Laghu Guna Ushna Virya* although it gives *Medhya* (increase intellectual) effects.

Chocoherb granules are predominately of *Madhur Rasa, Madhur Vipaka, Anushnasheet Virya* which provide actions like, *Ashvagandha*<sup>[5]</sup>, *Shatavari*<sup>[6]</sup>, *Vidarikanda, Jyotishmati, Sankhapushpi, Bringaraj, Kumari, Gajar* have are given effect as *Balya* (increase immunity). *Ashvagandha* and *Vidarikanda* have *Bruhaniya* (well nutrient) effects also. Some herbal drugs are work as *Medhya*

(increase intellectual) like *Bramhi, Jyotishmati, Shatavari and Sankhapushpi, Tulsi, Pippai, Pippali mool, Maricha* etc are given *Dipana – Pachana* effects that helps for good digestion and nutrition. *Rasayana* (restore health) effects given by herbal drugs like *Ashvagandha, Shatavri, bramhi, Bringaraj, Kumari* etc.<sup>[7]</sup> (Table 1) Sweet taste is more compatible for children thus granules are prepared with chocolate flavor.

### Conclusion:

This preliminary study shows improvement in Weight, Height and BMI as well. The overall therapy shows improvement in general health status of malnourished HIV infected teenagers. Chocoherb granules are Combination of herbal drugs which gives effect as *Balya* (boost immunity), *Bruhaniya* (well nutrient), *Rasayana* (restores health), and *Medya* (increase intellectual) as well. We are still continuing the study with large number of cases along with parameters like CD4 count.

### Limitation of study:

The sample size is small, and also duration of treatment may be advised for 6 month or more.

### Consent of patients:

Informed written consent of parents in local language was taken prior study.

### Acknowledgements:

We thank all the study participants and staff of Civil Hospital, Rajkot, Gujarat (Gujarat State AIDS Control Society)

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**Conflict of interest:** Author declares that there is no conflict of interest.

**Guarantor:** Corresponding author is guarantor of this article and its contents.

**Source of support:** None

**How to cite this article:**

Makwana D, Bhalodia S, Joshi P. Clinical evaluation of Chocoherb Granules in Human Immunodeficiency Virus Infected teenagers. Int. J. AYUSH CaRe. 2020; 4(4):297-302.