

**EFFECTIVENESS OF AMULYA AMRITATULSI RASAYAN AND AMULYA ENERGY Z CAPSULES IN TREATING TYPHOID: A CASE STUDY**Shashi Gupta<sup>1</sup>, Vinti<sup>1</sup>, Parikshit Bansal<sup>2</sup>, Kakoli Biswas<sup>3</sup> and Rajesh Biswas\*<sup>4</sup><sup>1</sup>Ayurvedic Consultants, Ayusham Health Care, Amulya Herbs Pvt. Ltd., Plot No 293, Industrial Area, Phase-1, Panchkula, Haryana, India.<sup>2</sup>Principal Scientific Advisor, Amulya Research Center (ARC), Amulya Herbs Pvt. Ltd., Plot No 293, Industrial Area, Phase-1, Panchkula, Haryana, India.<sup>3</sup>Head, Department of Biotechnology, DAV College, Sector-10, Chandigarh, India.<sup>4</sup>Head, Zoology Department, Government Home Science College, Sector-10, Chandigarh, India.**\*Corresponding Author: Rajesh Biswas**

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**ABSTRACT**

Amulya Amritatulsi Rasayan- containing extracts of just two plants - Tulsi (*Ocimum sanctum*) and Geloye (*Tinospora cordifolia*) is a proprietary anti-infective herbal (Ayurvedic) formulation being manufactured by Amulya Herbs Pvt. Limited, Panchkula (India). In combination with Amulya Energy Z capsules, the formulation is found to be highly effective in the treatment of typhoid. Amulya Energy Z capsules are a dietary supplement containing Ashwagandha (*Withania somnifera*), Safed Musli (*Chlorophytum borivilianum*), vitamins and minerals. Tulsi is considered as one of the holiest and most healthiness giving herbs in India. Geloy, Ashwagandha and Safed Musli the other three herbs used in formulation are available in India and known for medicinal use since ancient times. These plants are used in Ayurvedic system of medicine for total rejuvenation, immunomodulation, antibacterial activity and as antioxidants. Since ages the therapeutic uses of these plants are considered as safe, inexpensive and efficient. They heal many diseases due to chemical constituents present in different parts of plants. Antibacterial activity of chemical constituents of Geloy, Tulsi, Ashwagandha and Safed Musli against Salmonellosis is well documented. Thirty 'Widal test positive' Typhoid Patients, who were given 400mg Cefixime 1BD and paracetamol 500mg SOS by allopathic doctor for 15 days with no sign of recovery were successfully treated in Ayusham Health Care, Plot No 293, Industrial area, Phase-1, Panchkula, Haryana, India, using Amulya Amritatulsi Rasayan capsule 500mg, containing 50:50 combination of *Ocimum sanctum* and *Tinospora cordifolia*, twice a day for thirty days, along with Amulya Energy Z capsules 500mg, containing herbal extracts of Ashwagandha (*Withania somnifera*) 300mg, Safed Musli (*Chlorophytum borivilianum*)100mg, vitamins and minerals once a day for 30 days. The present case study suggests that the biologically active components of Tulsi and Geloy in combination with Ashwagandha and Safed Musli had synergistic activity against *Salmonella typhi* and show promise as an alternative cheap non-antibiotic combination for the effective treatment of for *S. typhi* infection.

**KEYWORDS:** Ayurveda, Typhoid, *Ocimum sanctum*, *Tinospora cordifolia*, *Withania somnifera*, *Chlorophytum borivilianum*.**INTRODUCTION**

Typhoid fever, caused by *Salmonella typhi* (*S. typhi*), is an infectious disease and causes morbidity and mortality throughout the world.<sup>[1]</sup> The rapid emergence of multi drug resistant (MDR) *S. typhi* is a major health concern. *Salmonella typhi* showing resistance to ampicillin, chloramphenicol, trimethoprim-sulfamethoxazole and fluoroquinolones, created therapeutic problem.<sup>[2,3]</sup> Resistance to the cephalosporins like ceftriaxone has also been reported.<sup>[4]</sup> The effective drug such as expanded-spectrum cephalosporins and azithromycin are expensive for developing countries such as India.<sup>[4-7]</sup> This situation necessitated the identification of natural novel immune

therapeutic agents capable of modulating the host immune responses in order to control the pathogen and introduction of new treatment regimen. Traditional medical practice has been known in many parts of the world.<sup>[8-10]</sup>, Tulsi (*Ocimum sanctum* Linn. Lamiaceae) is a sacred plant of Hindu religion worshipped all over the India. Tulsi means 'incomparable one' or 'matchless one' and is derived from Sanskrit.<sup>[11]</sup> Different parts of this plant have been used in indigenous medicine. In Ayurveda the plant has been well documented for its therapeutic potentials. This plant is traditionally known for its medicinal properties throughout the world.<sup>[12-14]</sup> The essential oil of *O. sanctum* has been known to be

administered against asthma, bronchitis, sinus infections, constipation, nausea, vomiting and cramp.<sup>[15]</sup> Plant extracts are potential sources of novel antimicrobial compounds, especially against bacterial pathogens.<sup>[16-19]</sup> The aqueous extract of *O. sanctum* showed inhibitory effect of growth on *Klebsiella*, *Escherichia coli*, *Proteus* and *Staphylococcus aureus*; while its alcoholic extract had similar effect on *Vibrio cholera*.<sup>[20]</sup> The alcoholic extract of *O. sanctum* was found to be active against MDR *S. aureus* showing resistance to common  $\beta$ -lactam antibiotics.<sup>[21]</sup> Rahman et. al.<sup>[22]</sup> reported antibacterial activity of *O. sanctum* leaf methanol extract against gram positive and gram negative bacterial pathogens. Antimicrobial property of *O. santum* was documented by Joshi et.al.<sup>[23]</sup> Antibacterial activity of Tulsi against *S. typhi* was demonstrated by Mandal et.al.<sup>[24]</sup>

In India *Tylophora cordifolia*, commonly known as Guduchi or Giloy, is used as a medicine for centuries in the Ayurvedic and Unani systems of the medicine.  $\alpha$ -D-glucan a compound from *T. cordifolia* have been shown to possess the immune-stimulating properties and stimulate NK cells, B cells and T cells with simultaneous production of various immune-stimulatory cytokines.<sup>[25,26]</sup> G1-4A, a polysaccharide from *T. cordifolia* has been shown to inhibit the intra cellular growth of *Mycobacterium tuberculosis* through toll-like receptor TLR4 dependent signaling.<sup>[27]</sup> Salmonella evade the immune system of hosts by using multiple strategies to establish itself in the host.<sup>[28]</sup> Macrophages treated with aqueous extract and methanolic extract of *T. cordifolia* showed immune-stimulating activities and secrete higher levels of IL-1 $\beta$ , IFN- $\gamma$ , and TNF- $\alpha$  by polarizing.<sup>[29]</sup> The methanolic extract of *T. cordifolia* showed greater activity against infection in macrophage and in mice.<sup>[29]</sup>

*Withania somnifera*, also known as 'Ashwagandha', is an important herb in ayurvedic and indigenous medical systems. *W. somnifera* exhibited significant antioxidant and antibacterial activities against *S. typhi*.<sup>[30]</sup> Reduction of severity of *Salmonella gallinarum* infection in broiler chicken using Supplementation of Ashwagandha root powder @ 0.5% in feed was reported.<sup>[31]</sup> It has also exhibited immunomodulatory activity.<sup>[32]</sup>

*Chlorophytum borivillianum* also known as 'Safed Musli' is celebrated as a Divya Aushad with unparalleled medicinal properties and used in ayurvedic and indigenous medical systems. It has various therapeutic values as total rejuvenator, antioxidant, immunomodulator and Antibiotic.<sup>[33]</sup> Root extract of *C. borivillianum* exhibited significant antibacterial and anti fungal activities.<sup>[34]</sup>

In the present case study, we evaluated the effect of 'Amulya Amritatuli Rasayan' an ayurvedic formulation prepared using Tulsi (*Ocimum sanctum*) and Geloy (*Tinospora cordifolia*) along with 'Amulya Energy Z capsule' a dietary supplement prepared using Ashwagandha (*Withania somnifera*) and Safed Musli (*Chlorophytum borivillianum*) on patients suffering from Typhoid.

## MATERIALS AND METHODS

**Amulya Amritatuli Rasayan:** Amulya Amritatuli Rasayan is a proprietary ayurvedic medicine for human, manufactured by Amulya Herbs private Ltd., 97, HSIIDC, I.E., Barwala-134118, Distt. Panchkula, Haryana. Details of the Amulya Amritatuli Rasayan are given in table.1.

**Table 1: Showing Details of Amulya Amritatuli Rasayan.**

Sr. no	Particulars						
1	Name of the product	Amulya Amritatuli Rasayan					
2	Type of the Formulation	Capsule					
3	Category	Proprietary (manufacturing Licence No.2) (ISM)HR					
4	Use	Human					
5	System	Ayurvedic					
6	Composition	Each 500 mg contains					
		Ingredients	Scientific Name	Quantity	Part used	Form	Bhava Prakash Nighantu (BPN) page No
		Tulsi	<i>Ocimum sanctum</i>	250mg	Leaves	Extract	BPN496
		Geloye	<i>Tinospora cordifolia</i>	250mg	Stem	Extract	BPN258
7	Method of Preparation	Reduced all ingredients to fine powder and mixed thoroughly in proper ratio. Mixed well in mortar and finally in a mass mixture to make homogenous powder. Stored in a dry place. Filled in capsule.					
8	Indication	Antipyretic, Rheumatism, Uric Acid and Prophylactic.					
9	Shelf life	3 years					
10	Side effect	Nil					

**Amulya Energy Z:** Amulya Energy Z capsules are daily food supplements containing herbal extracts of

Ashwagandha (*Withania somnifera*), Safed Musli (*Chlorophytum borivillianum*), vitamins and minarels.

Amulya Energy Z capsules are manufactured by Mass Pharmachem, Village- Dattowal, Manali Road, Teh-Nalagarh, Distt. Solan (H.P.), India. Marketed by

Amulya Herbs private Ltd., Plot No 293, Industrial Area, Phase-1, Panchkula, Haryana. India. Details of the Amulya Energy Z capsules are given in Table 2.

**Table 2: Showing Details of Amulya Energy Z capsules.**

Sr. no	Particulars					
1	Name of the product	<b>Amulya Energy Z</b>				
2	Type of the Formulation	Capsule				
3	Category	Proprietary				
4	Use	Human				
5	System	Ayurvedic				
6	Composition	Each 500 mg contains				
		Ingredients	Scientific Name	Quantity	Part used	Form
		Ashwagandha	<i>Withania somnifera</i>	300mg	Root/Leaves	Extract
		Safed Musli	<i>Chlorophytum borivilianum</i>	100mg	Root	Extract
		Vitamin A	2000IU			
		Vitamin B1	1.39mg			
		Vitamin B2	1.8mg			
		Vitamin B3	12mg			
		Vitamin B6	0.99mg			
		Vitamin B12	1mg			
		Vitamin C	40mg			
		Vitamin E	5.92mg			
		Folic Acid	0.1mg			
		Nicotinamide	15mg			
		Iron	5.73mg			
		Zinc	22.5mg			
		Magnesium	3.13mg			
	Potassium	2.07mg				
	Manganese	0.53mg				
	Copper	0.52mg				
	Iodin	0.11mg				
7	Method of Preparation	Reduced all ingredients to fine powder and mixed thoroughly in proper ratio. Mixed well in mortar and finally in a mass mixture to make homogenous powder. Stored in a dry place. Filled in capsule.				
8	Indication	Antipyretic, Rheumatism, Uric Acid and Prophylactic.				
9	Shelf life	3 years				
10	Side effect	Nil				

**Subjects:** Thirty patients in age group of 20-30 years were 'Widal-Test' positive and previously diagnosed by allopathic doctor as typhoid and were given antibiotic Cefixime 400mg, 1BD and paracetamol 500mg SOS for 15 days with no sign of recovery. They were subsequently treated at Ayusham Health Care- an ayurvedic clinic based at Plot No 293, Industrial area, Phase-1, Panchkula, Haryana, India. Amulya Ayurvedic clinic, Panchkula, India and were considered in present case study. When the patients approached the Amulya Ayurvedic clinic, all of them were having symptom of enteric fever (100°F -103°F) which starts low and increases daily and is accompanied by chill, muscle aches, weakness, fatigue, loss of appetite, weight loss and abdominal pain. The patients belonged to economically weaker sections and were living in peripheral urban region of Panchkula, Haryana, India.

**Treatment given:** Details of treatment protocol are given in **Table 3**.

**Table 3: Showing Details of 30 days Treatment given to the patient.**

Sr.No	Day	Medicine prescribed	Supplement prescribed
1	Day 01-07	Amulya Amritatulsi Rasayan 1 capsule BD	Amulya Energy Z capsule 1 OD, Digestive enzyme 1tea spoon BD after meal.
2	Day 08-14	Amulya Amritatulsi Rasayan1 capsule BD	Amulya Energy Z capsule 1 OD, Digestive enzyme 1tea spoon BD after meal.
3	Day 15-21	Amulya Amritatulsi Rasayan1 capsule BD	Amulya Energy Zcapsule 1 OD, Digestive enzyme 1tea spoon BD after meal.
4	Day 22-30	Amulya Amritatulsi Rasayan 1 capsule BD	Amulya Energy Z capsule 1 OD, Digestive enzyme 1tea spoon BD after meal.

**RESULTS AND DISCUSSION**

Improvement in health condition of the patients started between three-five days since administering Amulya Amritatulsi Rasayan along with Energy Z capsules and Digestive enzyme. Remission in abdominal pain was reported on day five-seven. Remission in fever, significant improvement in appetite and weakness was

reported on day eight-ten. Remission in chill was reported on day fifteen-twenty one. Remission in all the symptom was reported on day twenty second-twenty five i.e. 4<sup>th</sup> week onwards. No recurrence took place and treatment was discontinued. Details of the results are given in **Table- 4**.

**Table 4: Showing Details of 30 days Treatment given to patients.**

Day	Medicine prescribe	Supplement prescribed	Symptom	Remarks
Day 1	Amulya Amritatulsi Rasayan.	Energy Z capsule, Digestive enzyme.	Enteric fever which starts low and increases daily, chill, muscle aches, weakness and fatigue, loss of appetite and weight loss, Abdominal pain.	
Day 2	Same as day 1	Same as day 1	Same as day 1	Same as day 1
Day 3	Same as day 1	Same as day 1	Reduced intensity in enteric fever, chill. Appetite increased. Muscle aches, weakness and fatigue, Abdominal pain reduced	Improvement in symptom
Day 4	Same as day 1	Same as day 1	Reduced intensity in enteric fever, chill. Appetite increased. Muscle aches, weakness and fatigue, Abdominal pain reduced	Improvement in symptom
Day 5	Same as day 1	Same as day 1	Reduced intensity in enteric fever. Chill. Appetite increased. weakness and fatigue reduced	Improvement in symptom
Day 6	Same as day 1	Same as day 1	Reduced intensity in enteric fever. Chill. Appetite increased. weakness and fatigue reduced	Improvement in symptom
Day 7	Same as day 1	Same as day 1	Reduced intensity in enteric fever. Chill. Appetite increased. weakness and fatigue reduced	Improvement in symptom
Day 8-14	Same as day 1	Same as day 1	Chill. Appetite increased. weakness and fatigue reduced	No fever Improvement in symptom
Day 15-21	Same as day 1	Same as day 1	Appetite increased. weakness and fatigue reduced	No fever Improvement in symptom
Day 22-30	Same as day 1	Same as day 1	No symptom	Patient got successfully treated and start working

The rapid emergence of multidrug resistant (MDR) *Salmonella typhi* is a major health concern. Since the issues with antibiotic efficacy have been reported, it has become important to evaluate alternative inexpensive herbal drugs. The use of medicinal plants to treat disease is almost universal and is more affordable than purchasing expensive conventional drugs. Plants are used in Ayurvedic system of medicine for total rejuvenation, immunomodulation, antibacterial activity and as

antioxidant. Phytoconstituents of plants contain chemical properties similar to synthetic antibiotics.

Use of 'Amulya Amritatulsi Rasayan' (500mgBD) an ayurvedic formulation of Tulsi (*Ocimum sanctum*), Geloey (*Tinospora cordifolia*) and 'Amulya Energy Z' capsules (500mg OD) - a daily food supplement containing Ashwagandha (*Withania somnifera*), Safed Musli (*Chlorophytum borivilianum*), vitamins and

minerals were used for thirty days to cure Typhoid patients who were non responsive for fifteen days to synthetic antibiotic Cefixime (400mg 1OD), a third-generation cephalosporin. The present case study suggest that the biologically active components of Tulsi and Gelaye in combination with Ashwagandha and Safed Musli had synergistic activity against *Salmonella typhi* and show promise as a cheap alternative non synthetic antibiotic drug for *S. typhi* infection. Reports regarding antibiotic activity of peptide isolated from plants are available.<sup>[16-19]</sup> Antibiotic activity of 'Amulya Amritatulasi Rasayan' together with 'Amulya Energy Z' against *S. typhi* in patients, may have acted similarly as reported earlier where *Ocimum sanctum* acted against *S. typhi* in *in vitro* condition<sup>[24]</sup>, by the action of *Tinospora cordifolia*<sup>[25-29]</sup>, *Withania somnifera*<sup>[30-32]</sup> and *Chlorophytum borivilianum*<sup>[33,34]</sup> against various microorganisms.

Antibiotic activity of *T. cordifolia* may be attributed to  $\alpha$ -D-glucan that possess immune-stimulating properties and stimulate NK cells, B cells, and T cells with simultaneous production of various immune-stimulatory cytokines<sup>[25,26]</sup> and G1-4A, which has been shown to inhibit the intracellular growth receptor TLR4 dependent signaling.<sup>[27]</sup> Anti-oxidant activity and immunomodulatory activity of Tulsi, Gelaye, Ashwagandha and Safed Musli thus helped to improve overall health condition of the patient. Reports are also available regarding the therapeutic values of *Chlorophytum borivilianum* as total rejuvenator, antioxidant and immunomodulator.<sup>[33]</sup>

## CONCLUSION

This study shows that the combination of both 'Amulya Amritatulasi Rasayan' and 'Amulya Energy Z' capsules have the potential to effectively cure typhoid fever and infection without side effects and have a rejuvenating effect. Therefore these two formulations in the prescribed dosage could be effectively used to treat typhoid patients showing resistance against synthetic antibiotics.

Further study with larger number of patients can help in exploring high potential of the formulations in treating typhoid in human population.

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