

# Celiac Disease: Prevalence in Bahawalpur Region and Pharmacological Evaluation of Natural Products in its Treatment

Shahbaz Ahmed Qureshi<sup>1</sup>, Javeria Shahbaz<sup>1</sup>, Anas Ahmed<sup>2</sup>, Sh. Khurram Salam Sehgal<sup>3</sup>  
and Qaiser Bajeen<sup>4</sup>

## ABSTRACT

**Objective:** To assess the prevalence of celiac disease in Bahawalpur region Southern Punjab, Pakistan and to determine the pharmacological efficacy of kalonji seeds, olives and shawarma bread as its remedy.

**Study Design:** Experimental study

**Place and Duration of Study:** This study was conducted at the Bahawal Victoria Hospital Bahawalpur and private Gastroenterology and Hepatology clinics in Bahawalpur from January 2015 to June 2016.

**Materials and Methods:** Both male and female patients visiting the Bahawal Victoria Hospital Bahawalpur and private Gastroenterology and Hepatology clinics in Bahawalpur, presenting with the symptoms of celiac disease such as chronic diarrhea, vomiting, abdominal pain and / or weight loss, were included in the study. A questionnaire consisting questions regarding demographic data, presenting complaints, associated illness, dietary habits and family history was applied and serology as well as small intestinal biopsy of the patients was performed by the expert gastroenterologist, and the patients with positive biopsy were designated as celiac. Out of 300 patients, only 203 agreed for biopsy and among these 203 patients, 150 were confirmed as celiac by biopsy reports. Celiac patients were divided into five main groups, each containing 30 according to their chief complaints. These groups were further divided into two sub-groups, A and B gluten free or control group and on gluten with remedy respectively. The group on gluten plus remedy was further divided into three sub-groups and each of them was given one of the natural edibles; i.e. kalonji seeds, olives and shawarma bread. The results were evaluated in terms of the recovery from chief complaints (diarrhea, vomiting, indigestion, abdominal pain and weight loss). The patients visited the consultant after 2<sup>nd</sup>, 4<sup>th</sup> and 8<sup>th</sup> week of treatment to give the feedback of regimen.

**Results:** Kalonji reduced diarrhea, nausea and abdominal pain in 75% of the patients and completely cured weight loss i.e. 100%. The efficacy of olives was also same. Shawarma bread reduce the symptoms of diarrhea upto 100%, nausea, vomiting and abdominal pain 75%, indigestion and gas (50%), and weight loss in 100% of the patients.

**Conclusion:** The symptoms of celiac disease can be reduced by bringing mild changes in the diet plan and addition of the edibles which have ability to prevent and reduce the symptoms of celiac disease.

**Key Words:** celiac, gluten, Olives, kalonji, shawarma.

**Citation of articles:** Qureshi SA, Shahbaz J, Ahmed A, Sehgal SKS, Bajeen Q. Celiac Disease: Prevalence in Bahawalpur Region and Pharmacological Evaluation of Natural Products in its Treatment. Med Forum 2019;30(4):20-24.

## INTRODUCTION

Celiac disease (also called sprue, celiac sprue, and gluten enteropathy) is a permanent dietary disorder caused by an immunologic response to gluten, a storage

protein found in certain grains, which results in diffuse damage to the proximal small intestinal mucosa with malabsorption of nutrients. Celiac disease results from the interaction between gluten and immune, genetic, and environmental factors. In celiac disease when gluten is ingested, the immune system of the patient gets activated causing inflammation. Celiac disease is an immune-mediated enteropathy triggered in genetically susceptible individuals by the ingestion of gluten-containing grains (wheat, barley and rye). The disease is associated with human leukocyte antigen (HLA) DQ2 and DQ8 haplotypes. Gluten is digested by luminal and brush-border enzymes into amino acids and peptides. Classic, atypical, silent, latent and refractory are common forms of celiac disease.<sup>1</sup> The prevalence of celiac disease in world is about 1% of individuals and CD is the commonest genetically induced chronic disorders with female to male ratio of 2:1 to 3:1.<sup>2</sup>

<sup>1</sup>. Department of Gastroenterology & Hepatology Unit / Medicine<sup>2</sup> / Biochemistry<sup>3</sup> / Pharmacology<sup>4</sup>, Bahawal Victoria Hospital, Bahawalpur.

Correspondence: Dr. Shahbaz Ahmed Qureshi, Associate Professor and Head of Gastroenterology & Hepatology Unit, Bahawal Victoria Hospital, Bahawalpur.  
Contact No: 0321-6818394  
Email: shahbazq08@hotmail.com

Received: October, 2018  
Accepted: January, 2019  
Printed: April, 2019

However, it is estimated that 90% of these individuals remain undiagnosed. The prevalence of celiac disease in Pakistan is unknown. However, it is felt to be a very common disorder both in children and adults.<sup>3,4</sup>

Currently, there is only a single way to resolve the pathological changes and symptoms of celiac disease; i.e. exclusion of gluten from the diet for a sustained period of growth and development in children till it returns to normal and in adults, many disease complications are avoided. Green and colleagues found that 70% of patients reported an improvement in symptoms within 2 weeks of initiating the gluten-free diet. With strict dietary control, antibody levels may revert to normal during 6 to 12 months of instituting the diet, complete histologic resolution may take up to 2 years. In a small percentage of patients it has been reported that small intestinal recovery and resolution of symptoms is incomplete.<sup>4,5</sup> We aimed to assess the prevalence of celiac disease in Bahawalpur region Southern Punjab, Pakistan and to determine the pharmacological efficacy of kalonji seeds, olives and shawarma bread as its remedy.

## MATERIALS AND METHODS

This study is of experimental type and conducted in the Region of Bahawalpur, Punjab, Pakistan. The duration of the study was 15 months i.e. from January 2015 to June 2016. The technique used for the data collection was the convenient sampling technique.

Both male and female patients visiting the Bahawalpur Victoria Hospital, Bahawalpur and private Gastroenterology and Hepatology clinics in Bahawalpur, presenting with any of the symptoms of celiac disease; i.e. chronic diarrhea, vomiting, abdominal pain or weight loss, were included in the study. The patients with raised tissue antitransglutaminase antibodies (IgG & IgA) along with positive biopsy report became the part of the study. Patients from other cities, irrespective of the city of residence, were also included. All the patients were taking gluten in their diet.

The patients below the age of 11 years were excluded from the study. Participants having thyroid disease, diabetes mellitus and / or on laxative therapy were also excluded because this might interfere with autonomic neuropathy. Patients who had Marsh 0 Grade on biopsy were also excluded from study as according to the Marsh-Oberhuber classification, Marsh 0 Grade (pre-infiltrative), represents normal histology<sup>(5)</sup>. The experimental tool for this study was researcher supported questionnaire which consisted of six different sections. The Sections of questionnaire recorded demographic data, individual's chief complaints as; diarrhea, nausea and vomiting,, indigestion and gas , abdominal pain and loss of weight along with its duration, mode of occurrence and if relieved by anything. In another section of questionnaire the

subjects were asked for any associated illnesses like Diabetes mellitus, Dermatitis Herpetiformis, Down's syndrome and Thyroid disease along with the duration of occurrence and was noted. Data also comprises of miscellaneous personal information of patients as their dietary habits, medicinal history, family history, gynecological history in case of females and history of their past illness. After getting the history of the subjects, they were undergone for the assessment of weight .This all was recorded on zero day of patient that was the first day when patient comes with anyone of the complaints of celiac disease.

Then the patient was asked to visit a laboratory for his/her blood investigation which included blood glucose and serum Thyroid Stimulating Hormone (TSH). His/her serum autoantibodies i.e., Anti tissue transglutaminase antibodies (IgG & IgA) were also done at the same time. This was all noted. Reviewing the serum auto antibodies level reports and signs and symptoms of the patients, they were asked to come for endoscopy and tissue from duodenal part of small intestine was taken. Endoscopy was done after signing the consent. . All the agreed patients were entertained for small intestinal biopsy. The reporting was done according to Marsh-Oberhuber classification. Only positive cases on histopathology were confirmed for celiac disease and entertained for the study.

Then the confirmed cases of celiac disease were divided into set of 30 patients each in five major groups according to their chief complaints. These five groups were further divided into two groups :A (On Gluten free n=6), for each presenting complaint.

B (On gluten=24) as for comparison.

The group B was further divided into three sub-groups for their treatment regimen. The sub- groups were as follows.

Group An=6: Control: With no natural treatment but only normal diet as before.

Group BI n=8:Kalonji one fourth teaspoon with breakfast and dinner.

Group BII n=8:Two to three olives (FIGGARO Company) in breakfast and dinner.

Group BIII n=8: Shawarma bread occasionally with gluten containing diet.

Patients belonging to these four groups were asked to follow the prescribed remedy strictly and note the changes regarding their chief complaints and come back after two, four and eight weeks. The improvement in their signs & symptoms; i.e. diarrhoea, nausea and vomiting, indigestion and gas abdominal pain & weight loss were noted and recorded on follow-up questionnaire. After recording the data after two, four and eight weeks of treatment, the results were analysed. At the end of 8<sup>th</sup> week, improvement was assessed in terms of symptoms and signs and wellbeing. However, the serology and histopathology could not be repeated due to certain limitations of study.

## RESULTS

The population of Bahawalpur region of Southern Punjab is estimated approximately as 3000000. About 0.7 % of total population of Bahawalpur was found to be visiting the medical out-patient department, emergency unit and different private clinics for GIT disorder during the study period; i.e. Fifteen month duration. Among the patients with GI complaints, about 4 % of patients were seem to be Celiac according to their chief complaints; i.e. chronic diarrhoea, abdominal pain, indigestion and gas. However, about 1.2 % of the above suspected Celiac patients were confirmed for the presence of celiac disease through intestinal biopsy. Hence, the prevalence of celiac disease in Bahawalpur region was almost in accordance with available literature for world-wide population; i.e. 1 %.

Demographic data reveals that 65 % of patients were females and rest 35% were males. Most of the participants, 55% were young; i.e. belonging to the age group of 21-40 years as shown in Table 1. The patients belong to various districts of Punjab showing 39%(maximum) of distribution in District of Bahawalpur as the center of study was Bahawalpur, therefore the frequency of patients in this region was high. The results regarding chief complaints of celiac disease such as diarrhea, vomiting, indigestion and gas, abdominal pain and weight loss were noted on follow-up visits of the patients at 2<sup>nd</sup>, 4<sup>th</sup> and 8<sup>th</sup> weeks and the outcomes were interpreted.

Regarding Diarrhea at 0 week, patients in both the groups; i.e. A (Gluten free) and B (On Gluten), were having diarrhea. On follow up at week two, four and eight, the difference was very clear that patients on gluten free (A) showed 100% cure as compared to group-B i.e. On gluten diet and different edibles. Different treatment regimens were compared as shown in Table-2 and the results revealed that in group-BI (Gluten+Kalonji), 75 % of patients at 2<sup>nd</sup> week, 25 % at 4<sup>th</sup> and at 8<sup>th</sup> week had diarrhea showing that gluten with Kalonji can reduce diarrhea up to 75%; whereas, in group-BII (Gluten+Olives), 75 % of patients at 2<sup>nd</sup> week, 50 % at 4<sup>th</sup> week and 25 % at 8<sup>th</sup> week had diarrhea which indicated that gluten with olives can reduce diarrhea up to 75%. In group-BIII (Gluten+Shawarma bread), 50 % of patients at 2<sup>nd</sup> and 4<sup>th</sup> week and 0 % at 8<sup>th</sup> week had diarrhea which illustrates that gluten with Shawarma bread can reduce diarrhea up to 100%.

Effects of treatment on Nausea and Vomiting at 0 week, patients in both the groups; i.e. A (Gluten free) and B (On Gluten), were having Nausea and Vomiting. On follow up at week two, four and eight, the difference was very clear that patients on gluten free (A) showed 100% cure as compared to group-B i.e. on gluten diet and various natural remedies.

Different treatment regimens were compared as shown in Table-2 and the results showed that In group-BI (Gluten+Kalonji), 75 % of patients at 2<sup>nd</sup> week, 25 % at 4<sup>th</sup> and at 8<sup>th</sup> week had nausea and vomiting showing that gluten with Kalonji can reduce nausea and vomiting up to 75%; whereas, in group-BII (Gluten+Olives), 75 % of patients at 2<sup>nd</sup> week, 50 % at 4<sup>th</sup> week and 25 % at 8<sup>th</sup> week had nausea and vomiting which indicated that gluten with olives can reduce nausea and vomiting up to 75%. In group BIII (Gluten +Shawarma bread) 25 % of patients at 2<sup>nd</sup>, 4<sup>th</sup> and 8<sup>th</sup> week had nausea and vomiting which illustrates that gluten with Shawarma bread can reduce nausea and vomiting up to 75 %.

Discussing the Abdominal Pain at week zero, patients in both the groups; i.e. A (Gluten free) and B (On Gluten), were having abdominal pain. The Table-2 shows that on follow-up the symptom of abdominal pain in group BII (Gluten +Olives) was 50 % at 2<sup>nd</sup> and 4<sup>th</sup> week and 0% at 8<sup>th</sup> week which illustrates that gluten with olives can reduce abdominal pain up to 100%. Pain was reduced up to 75% in groups on kalonji and shawarma.

In case of Indigestion and Gas at 0 week, patients in both the groups; i.e. A (Gluten free) and B (On Gluten), were having indigestion and gas. On follow up at two, four and eight week the Table-2 showed that in group BI (Gluten + Kalonji) 50 % of patients at 2<sup>nd</sup>, 4<sup>th</sup> and 8<sup>th</sup> week had indigestion and gas which illustrates that gluten with Kalonji can reduce indigestion and gas up to 50 %. Among BII (Gluten +Olives) 0 % of patients at 2<sup>nd</sup>, 4<sup>th</sup> and 8<sup>th</sup> week had indigestion and gas which illustrates that gluten with olives can reduce indigestion and gas up to 100%. In group BIII (Gluten +Shawarma bread) 75 % of patients at 2<sup>nd</sup> week, 50 % at 4<sup>th</sup> week and 50% at 8<sup>th</sup> week had indigestion and gas which illustrates that gluten with Shawarma bread can reduce indigestion and gas up to 50 % only.

**Table No.1: Age group of Patients**

Age groups	Total	Percentage
0-20 yrs	22	15%
21-40 yrs	83	55%
41-60 yrs	28	19%
> 60 yrs	17	11%
Total	150	100%

Results regarding Weight Loss at 0 week, patients in both the groups; i.e. A (Gluten free) and B (On Gluten), were having the complaint. On follow up at week two, four and eight, the difference was very clear that patients on gluten free (A) showed improvement as compared to group-B where the patients remained as such. The Table showed that in group BI (Gluten + Kalonji) 50 % of patients at 2<sup>nd</sup> week, 100 % at 4<sup>th</sup> and at 8<sup>th</sup> week had weight loss which illustrates that gluten with Kalonji can reduce weight loss up to 100%. In group BII (Gluten +Olives) 25 % of patients at 2<sup>nd</sup> week, 0% at 4<sup>th</sup> week and at 8<sup>th</sup> week had weight loss

which illustrates that gluten with olives can reduce weight loss up to 100%. In group BIII(Gluten +Shawarma bread) 25 % of patients at 2<sup>nd</sup> week,0 % at

4<sup>th</sup> week and 8<sup>th</sup> week had weight loss which illustrates that gluten with Shawarma bread can reduce weight loss up to 100 %.

**Table No.2: Cumulative table showing outcome of different treatment regimen and their effect on different symptoms of celiac disease**

Symptoms	Group A Control Gluten Free) N=6 each	Group B(Gluten + Remedy)											
		B1-Effect of kalonji (weeks)				B2Effect of olives (weeks)				B3-Effect of shawarma bread (weeks)			
		0	2 <sup>nd</sup>	4 <sup>th</sup>	8 <sup>th</sup>	0	2 <sup>nd</sup>	4 <sup>th</sup>	8 <sup>th</sup>	0	2 <sup>nd</sup>	4 <sup>th</sup>	8 <sup>th</sup>
Diarrhea (n) 30	0 0%	8 100%	6 75%	2 25%	2 25%	8 100%	6 75%	4 50%	2 25%	8 100%	4 50%	4 50%	0 0%
Nausea & vomiting (n) 30	0 0%	8 100%	2 25%	2 25%	2 25%	8 100%	6 75%	4 50%	2 25%	8 100%	2 25%	2 25%	2 25%
Abdominal Pain (n) 30	0 0%	8 100%	2 25%	2 25%	2 25%	8 100%	4 50%	4 50%	0 0%	8 100%	2 25%	2 25%	2 25%
Indigestion & Gas (n) 30	0 0%	8 100%	4 50%	4 50%	4 50%	8 100%	0 0%	0 0%	0 0%	8 100%	2 25%	4 50%	4 50%
Loss of weight (n) 30	0 0%	8 100%	4 50%	0 0%	0 0%	8 100%	6 75%	4 50%	0 0%	8 100%	2 25%	0 0%	0 0%

**DISCUSSION**

Celiac disease, also known as *celiac sprue*, is one of the most common small intestinal autoimmune disorders. It is possibly due to ingestion of gluten, a storage protein in wheat, rye and barley, the major components of the daily diet. The patients with celiac disease present with diarrhea, vomiting, indigestion, anemia and weight loss. The prevalence of the disease in the world is about 1% and its number is reported to increase alarmingly around the globe.<sup>4-7</sup> There is not much work done regarding celiac disease in Pakistan therefore, no reported data is available for this region, especially the area of Bahawalpur, where most of the people belong to economically poor class and are usually reluctant to visit the medical experts for their complaints like GIT disorders. Majority of the population of BWP region is not well-educated and even not aware of the health issues, and mostly patients visit general practitioners and quacks and receive only temporary treatment. Celiac disease, if not properly diagnosed and managed, may lead to severe malabsorption, increased morbidity and serious complications like small gut lymphoma and adenocarcinoma etc.<sup>8,9</sup> Southern Punjab is the area with rural community which is almost wholly dependent on wheat as source of the diet which has “gluten”, the main causative agent of celiac disease. There were many cases reporting the above stated complaints but due to limited facilities of investigation as serology and

biopsy, the cases were not registered under proper diagnosis. This study was aimed to document the reported cases of celiac disease to check the prevalence of the disease in Bahawalpur region, and thus, to generate awareness both in the local and scientific communities for the disease as well as the exact etiology and importance of diet especially the natural products which can help the patients to set their diet plans in order to reduce their discomfort and improve the quality of their lives.<sup>10-12</sup>

The results revealed that among the presenting complaints of celiac disease, diarrhea was the most common, and then abdominal pain and indigestion. The results showed that there was recovery from chief complaints like diarrhea, vomiting, indigestion and weight loss in the patients receiving olives, kalonji seeds and shawarma bread along with gluten diet, shawarma bread being the best. As expected, patients with gluten free diet showed good results as compared to patients on gluten diet.<sup>6</sup>

The study shows that celiac disease is a hidden disease and needs to be discussed at national and international forums to minimize its lifelong persistent nature, impact on social life and its complications. The patients as well as their first and second degree relatives should be provided information regarding the disease. It is very difficult to live on gluten free diet especially in a poor country like Pakistan due to limited resources as well as non-availability of gluten free diet, hence such types of

edibles, like olives, shawarma bread and Kalonji, may be added in the daily diet plan of the patients with celiac disease.

As far as limitations of the current study are concerned, we could not perform the experiments in animal models due to no availability of transgenic mice. The serology being expensive could be done only once and not after the treatment.

## CONCLUSION

The symptoms of celiac disease can be reduced by bringing mild changes in the diet plan and addition of the edibles which have ability to prevent and reduce the symptoms of celiac disease. There is a need to study these edibles as well as others, which can easily be added in the diet regimen, by administering them to increased number of patients and to explore their mechanism of action.

### Author's Contribution:

Concept & Design of Study: Shahbaz Ahmed Qureshi  
Drafting: Javeria Shahbaz, Anas Ahmed

Data Analysis: Sh. Khurram Salam  
Sehgal, Qaiser Bajeen

Revisiting Critically: Shahbaz Ahmed Qureshi,  
Javeria Shahbaz

Final Approval of version: Shahbaz Ahmed Qureshi

**Conflict of Interest:** The study has no conflict of interest to declare by any author.

## REFERENCES

- Green PH, Rubin M. Capsule endoscopy in celiac disease: diagnosis and management. *Gastrointestinal Endoscopy*. Clin North Am 2006; (16):307-16.
- Barbar M, Ahmad I, Rao MS, Iqbqal R, Asghar S, Saleem S. Celiac disease and celiac crisis in children. *J Coll Physicians Surgeon Pak* 2011;(21):487-90.
- Rashid M, Khan AG. Celiac disease in Pakistan: challenges and opportunities. *J Ayub Med Coll Abbottabad* 2009;(21):1-2.
- Oberhuber G, Granditsch G, Vogelsang H. The histopathology of coeliac disease: time for a standardized report scheme for pathologists. *Eur J Gastroenterol Hepatol* 1999;(11):1185.
- Bardella M, Velio P, Cesana B, Prampolini L, Casella G, Di Bella C, et al. Coeliac disease: a histological follow-up study. *Histopathol* 2007;50:46571.
- Schuppan D, Junker Y, Barisani D. Celiac disease: from pathogenesis to novel therapies. *Gastroenterol* 2009;137:1912-33.
- Abdulkarim AS, Burgart LJ, See J, Murray JA. Etiology of nonresponsive celiac disease: results of a systematic approach. *Am J Gastroenterol* 2002;97:2016-21.
- Cummins AG, Thomson IC. Prevalence of celiac disease in the Asia-Pacific region. *J Gastroenterol Hepatol* 2009;24:1347-51.
- Gujral N, Freeman HJ, Thomson AB. Celiac disease: Prevalence, diagnosis, pathogenesis and treatment. *World J Gastroenterol* 2012;18:6036-59.
- Husby S, Koletzko S, Korponay-Szabo I, Mearin M, Phillips A., Shamir R, et al. European society for pediatric gastroenterology, hepatology, and nutrition guidelines for the diagnosis of coeliac disease. *J Pediatr Gastroenterol Nutr* 2012;54: 136-60.
- Ludvigsson JF, Leffler DA, Bai JC, Biagi F, Fasano A, Green PH, et al. The Oslo definitions for coeliac disease and related terms. *Gut* 2013;62:43-52.
- Zarkadas M, Cranney A, Case S, Molloy M, Switzer C, Graham I, et al. The impact of a gluten-free diet on adults with coeliac disease: results of a national survey. *J Human Nutr Dietetics* 2006;19:41