**NATUROPATHIC THERAPY**

**DISEASE PROCESS AND PATHOPHYSIOLOGY**

Irritable bowel syndrome is a chronic gastrointestinal disorder that is characterised by the alteration of function of the gastrointestinal tract resulting in abdominal pain, constipation or diarrhoea. The aetiology of the disease is unknown but it is associated alteration of neural transmission along the brain-gut axis that mainly involves the serotonin (Crowell, 2004). The pathophysiology of irritable bowel syndrome involves distortion of the brain gut axis that is caused by serotonin deregulation. In the gastrointestinal tract, serotonin is essential in the initiation of peristalsis, secretion and nociceptive reflexes that ensure the normal functioning of the gastrointestinal tract (Crowell, 2004). The alteration of serotonin secretion therefore results in the alteration of sensation resulting in abdominal pain, alteration of gastrointestinal motility resulting in constipation or diarrhoea and alteration of the secretion functions of the gastrointestinal tract (Crowell, 2004). In the world, irritable bowel syndrome has affected 11% of the population and also there is no any social or economic factor that influences the incidence of the disease (Card, Canavan and West, 2014). Also individuals that are diagnosed with the disease are at an increase likelihood of other functional disorders associated with the disease (Card, Canavan and West, 2014). The current allopathic treatment of the disease include the use of anticholinergic medication such as dicyclomine to relieve deregulation of the brain-gut axis, laxative to relive the patient from constipation and tricyclic antidepressants such as imipramine for the management of adverse psychological distress (Lehrer, 2017).   Other allopathic management of the disease process include the use of antidiarrheals such as loperamide to enhance the quality of life of the patient as well as control volume loss through chronic diarrhoea (Lehrer, 2017). The allopathic approach to the management of irritable bowel syndrome is focused on the management of symptoms to enhance the quality of life of the patient.

**NATUROPATHIC AND FUNCTIONAL MEDICINE EXPLANATION**

Gastrointestinal motility is among the major functional drivers of the gastrointestinal system that are altered by the disease process due to alteration of brain-gut axis that is regulated through the production of serotonin (El-Salhy, 2012). The consequences of the alteration can be hyper-motility resulting in diarrhoea, hypo-motility resulting in constipation or a mixed aspect of hyper-motility and hypo-motility resulting in mixed diarrhoea and constipation (Lehrer, 2017). The risk factors that are associated with alteration in the gastrointestinal motility include loss of circulating volume caused by chronic diarrhoea alongside excessive discomfort caused by abdominal pain and psychological distress to the patient (Saha, 2014). The management of the disease process is therefore focused on the restoration of gastrointestinal motility.

The functional testing that is undertaken to ascertain gastrointestinal motility includes testing for stool changes, taking a comprehensive history of the patient and screening studies (Saha, 2014). Evaluation of stool changes such as frequency of defecation, changes in the form and colour of stool is an important indicated of the gastrointestinal motility of the patient (El-Salhy, 2012). On the other hand, a comprehensive history taking of the patient regarding the occurrence of gastrointestinal disorders in the family, changes in weight and iron deficiency anaemia is important in the evaluation of the gastrointestinal motility (El-Salhy, 2012). Lastly, undertaking a complete blood count test on the patient is important in the evaluation of iron deficiency anaemia that is caused by insufficient dietary sources of iron. Other studies that can be conducted include the evaluation of possible metabolic disorders and ruling out dehydration and electrolyte imbalances (Lehrer, 2017). Undertaking the studies and evaluation of the general condition of the patient is important in the management of the disease process because it provides objective information regarding the patient.

**THERAPEUTICS**

In the management of irritable bowel syndrome, extensive research into nutritional and complementary therapy has been undertake to generate new evidenced and knowledge in support of the disease process (Magge and Lembo, 2011). Also, complementary and alternative medicine such as the use of herbal and nutritional remedy is proven effective in the management of symptoms that are associated with irritable bowel syndrome (Magge and Wolf, 2013). In the management of the disease process, nutritional and complementary therapy researchers such as Yoon and colleagues state that due to a broad range of symptoms seen in chronic cases of irritable bowel syndrome herbal therapies are deemed effective in the management of the disease process (Yoon et al., 2011). The range of symptom include diarrhoea, constipation or mixed symptoms that makes a single herb or herb combination remedy more effective in the management of the disease process to enhance the quality of life of the clients. The single herb nutritional and complementary therapy that is used in the management of irritable bowel syndrome includes extracts from turmeric, peppermint oil and the leaves of artichoke plant (Yoon et al., 2011). Also a systematic review conducted by Khanna, McDonald and Lavesque, 2014 proposes the efficacy of peppermint oil as an herbal remedy (Khanna, McDonald and Lavesque, 2014). The important of peppermint oil in the management of the disease process is also proven to be effective by Pittler and Ernst in their critical review and meta-analysis (Pittler and Ernst, 1998). Furthermore, Bahrami and colleagues proposes that hypericum perforatum, pepper-mint oil, psyllium seeds and carmint are effective in the management of the disease process (Bahrami et al., 2016). On the other hand, herbal combinations are also used to achieve a broad therapeutic effecting in the nutritional and complementary therapeutic approached to the management of irritable bowel syndrome (Grundman and Yoon, 2014). According to Yoon and colleagues, the commonly used herbal combination in the management of irritable bowel syndrome include Tibetan herbal mixture that is available through its trademark name Padma Lax which is a combination of twelve herbs and three mineral (Yoon et al., 2011). Other herbal combinations that are used in the nutritional and complementary therapeutic approach to the management of irritable bowel syndrome include a variety of Chinese herbal formulas that are effective in the management of constipation caused by water deprivation during the disease process. According to Yoon and colleagues, the herbal remedies used in the management of irritable bowel syndrome are effective with mild side effects among client (Yoon et al., 2011).

Regarding the dietary management of irritable bowel syndrome, exclusion diet is the most preferred approach to relieve symptoms in the disease process. Dietary exclusion is preferred in the management of the disease process because food intolerance and allergic reactions to food contents is considered to be among the leading causes of symptom aggravation (Yoon et al., 2011). In the dietary exclusion, Pizzorno and Murray recommend the exclusion of foods that are rich in carbohydrates, coffee, alcohol and hot spices from diet (Pizzorno and Murray, 2007). Also, in the management of symptoms such as gastrointestinal motility disturbances and visceral hyperactivity the elimination diet often undertaken include the exclusion of products such as yeast, wheat, dairy products and citrus fruits from the diet (Yoon et al., 2011). Other researchers such as Pizzorno and Murray recommend the replacement of cereals with vegetables, fruits and legumes that in diet to optimize the fibre intake so as to relieve constipation associated with irritable bowel syndrome (Pizzorno and Murray, 2007). Also Pizzorno and Murray states that the inclusion of enteric coated peppermint oil (ECPO) about 0.2ml – 0.4ml twice a day in the disease process is effective in inhibiting gastrointestinal smooth muscle action therefore relieving abdominal pain caused by excessive contraction of the gastrointestinal muscles. On the other hand, Portincasa and colleagues proposes that dietary inclusion of curcumin and funnel essential oil is effective in the management of the disease process through alleviating disease symptoms such as constipation and bloating that causes severe discomfort to the patients (Portincasa et al., 2016). Furthermore according to Julien and colleagues inclusion of glutamine in the dietary intake of the patients is clinically relevant in the management of intestinal permeability that frequently occurs in diarrhoea predominant disease process (Bertrand, Ghouzali and Guerin, 2015).

The exclusion of micronutrients such as fructose and fructose containing products such as cereals and sugar-alcohols that causes increased flatulence and abdominal discomfort is effective in the management of the disease process through symptom reduction (Yoon et al., 2011). Minimizing the intake of high-refined sugar that causes rapid rise in the patient’s blood sugar also inhibits the gastrointestinal motility resulting in constipation during the disease process (Pizzorno and Murray, 2007). On the diarrhoea symptoms among irritable bowel syndrome patients can be managed through reduction of fat intake. According to Pizzorno and Murray the variation of nutritional intake in the management of irritable bowel syndrome, the optimization of fibre intake in diet is effective in the management of constipation (Pizzorno and Murray, 2007). Pizzorno and Murray recommend the addition of psyllium husk which is a soluble bulk-forming laxative that relieves constipation through enhancing peristalsis (Pizzorno and Murray, 2007). Furthermore, Pizzorno and Murray recommend the inclusion of partially hydrolyzed guar gum that contains high fibre content which assists in enhancing peristalsis in the gastrointestinal tract to relieve constipation caused by irritable bowel syndrome (Pizzorno and Murray, 2007).

Nutritional and complementary therapy researchers such as Tilburg and colleagues propose that ginger is one of the most commonly used yet considerably less effective in the management of irritable bowel syndrome among majority of individuals in the management of the disease process (Tilburg et al., 2014). According to research conducted by Tilburg and colleagues, ginger as a remedy used in the management of irritable bowel syndrome is also considered having mild side effects thus considered by many to be a tolerable approach to nutritional and complementary therapy in the management of irritable bowel syndrome (Tilburg et al., 2014). Despite ginger being less effective as a nutritional and complementary therapeutic agent in the management of irritable bowel syndrome many clients use ginger in the management of the disease process mainly because of mild side effects associated with ginger as well as being readily available. On the other hand, despite ginger being less effective in the management of irritable bowel syndrome, the antispasmodic and mild anti-inflammatory effect of ginger contribute to the management of nausea.

In the management of irritable bowel syndrome, another alternative approach used includes the mind-body therapy among the patients that involves establishing behavioral and psychological control of the body during the disease process. The commonly used mind and body therapies that are used by irritable bowel syndrome patients include hypnotherapy and cognitive-behavioral therapy that are directed towards improving the copping mechanism of the patient to attain quality life during the disease process (Yoon et al., 2011). According to research conducted by Yoon and colleagues, hypnotherapy is an effective approach in the management of fatigue, anxiety as well as other physical symptoms that are associated with irritable bowel syndrome resulting to an improvement in the quality of life of the patient (Yoon et al., 2011). In the disease process, abdominal pain caused by excessive contraction of the smooth muscles of the gastrointestinal tract causes severe abdominal pain to the patient which is among the leading symptoms of irritable bowel syndrome. According to the review undertaken by Yoon and colleagues, hypnotherapy has been proven to be effective in the management of guiding as well as severe abdominal pain caused by excessive muscle contraction through the modulation of the cortical brain circuits that are mainly involved in pain and vigilance modulation (Yoon et al., 2011).

Another approach that is considered to be effective in the management of irritable bowel syndrome during the disease process is the use of relaxation techniques. According to reviews conducted by Yoon and colleagues the relaxation techniques are effective in the management of gastrointestinal symptom aggravation during the disease process and also the management of psychological distress as well as daily stressors that are associated with chronic irritable bowel syndrome (Yoon et al., 2011). In the management of the disease process, relaxation techniques are proven to be an effective alternative treatment among those patients that are at an increased risk of psychological distress and other form of psychopathology in their lifetime due to the chronic nature of the disease process.

Also other researchers, such as Pizzorno and Murray describe that the relationship between 5-hydroxy tryptophan (5-HTP) and serotonin, a neurotransmitter that is produced in both the digestive tract and the brain is effective in the management of the disease process (Pizzorno and Murray, 2007). The alternative approaches to the management of the disease process also include the use of acupuncture and moxibustion that produces an impact on the serotonergic and cholinergic neural transmission between the brain and the gastrointestinal tract (Crowell, 2004). In the management of irritable bowel syndrome, these alternative medicine approaches reveal efficacy in the management of abdominal pain, distension of the bowel and reduction of symptom severity (Yoon et al., 2011).

In the management of irritable bowel movements, exercises are important in maintaining the gastrointestinal functions as well as reduction of psychological distress throughout the period of illness among the patients (Yoon et al., 2011). Indulging in physical exercises also minimizes symptom aggravation as well as elimination of gas from the gastrointestinal tract (Yoon et al., 2011).

Probiotics are microbial products that are used in attaining an alteration of the intestinal flora to relieve the symptoms among patients (Kajander et al., 2007). In the naturopathic management of irritable bowel syndrome, microorganisms such as L. plantarum 299v, B. Bacterium and L. Acidophilus are considered to be highly effective in alleviating symptoms among the patients (Pizzorno and Murray, 2007). Systematic reviews conducted by Hoveyda and colleagues proved to be effective in the management of chronic and intermittent irritable bowel syndrome through alleviating symptoms such as abdominal pain, flatulence, bloating leading to an overall improvement in the quality of life of the patient (Hoveyda et al., 2009). Similarly, as systematic review conducted by Moayyedi and colleagues agrees that in the management of the disease process, probiotics may immensely benefit in the management of irritable bowel syndrome through the ability of the approach to relive the associated symptoms (Moayyedi).

Furthermore, another pertinent alternative medicine approach in the management of irritable bowel syndrome is the cognitive behavioral therapy approach that is being practice by some patients despite this approach having no concrete evidence that proves its efficacy (Yoon et al., 2011). The management of irritable bowel syndrome using cognitive behavioral therapy is not undertake to alter the disease process but rather to address the psychosomatic issues associated with the disease process (El-Salhy, 2012). On the other hand, cognitive behavioral therapy can be consider rather to be effective when used in combination with other natural and alternative medicine approaches to the management of irritable bowel syndrome. Lastly, according to the review conducted by Yoon and colleagues, a combination of cognitive-behavioral therapy and pharmacological interventions in the management of the disease process is proven to have a high efficacy in promoting the quality of life of the patient (Yoon et al., 2011).

**NATUROPATHIC PROTOCOL**

In the management of irritable bowel syndrome, the results of the various clinical and academic resources discussed provide evidence from research that informs the development of a naturopathic protocol in the management of the disease process. The naturopathic protocol will highlight the information to be provided to the patients as well as complementary and alternative medicine practitioners regarding the management of the disease process. The naturopathic protocol to be used in the management of irritable bowel syndrome will include dietary exclusion and supplements that have high efficacy in the management of symptoms associated with the disease process. The nutritional approach includes restriction of dietary foods that include hot spices, excessive consumption of alcohol, coffee as well as food that are considered to be highly rich in carbohydrates.

The naturopathic protocol also incorporates the exclusion of micronutrients such as fructose and fat in the disease process to enhance the quality of life of the patient through symptom reduction. Evidence suggests that dietary restriction of the nutritional these nutritional products are effective in reducing aggravation of the symptoms during the disease process. Also to enhance gastrointestinal motility in the management of the disease process, the naturopathic protocol includes the inclusion of dietary products such as vegetables, fruits, legumes, peppermint oil and optimize on fibre intake. Furthermore, to alleviate severe discomfort caused by bloating and constipation, curcumin and funnel essential oil are included in the patients’ diet according to the naturopathic protocol. To optimize on fibre intake, the naturopathic protocol indicates that patients take psyllium husk which is a soluble bulk-forming laxative and partially hydrolyzed guar gum that contains high amounts of fibre. Regarding the nutritional approach to the naturopathic protocol, the contradiction regarding the effectiveness of ginger as a remedy should be highlighted. Patients should use ginger alongside other nutritional approached in the management of the disease process to achieve the desired effect.

The naturopathic protocol includes herbal therapies using a single herb or a combination of herbs in the management of the disease process to relieve the broad range of symptoms. Herbal extracts such as turmeric, peppermint oil and the leaves of artichoke plant are important remedies in the management of irritable bowel syndrome due to their high efficacy and mild side effects as compared to allopathic treatment. Also herbal combination such as Tibetan herbal mixture sold by its trademark Padma Lax and contains twelve herbs and three minerals that have a high efficacy in the management of constipation caused by water deprivation.

Apart from herbal and nutritional approach to the management of the disease process, physical exercises are also considered to be effective and should be recommended to the clients. Exercises enhance the gastrointestinal functioning through enhancing peristalsis movement caused by the repeated contraction and relaxation of the smooth muscles in the walls of the gastrointestinal tract. Apart from exercises, the inclusion of relaxation techniques in the naturopathic management of the disease process is effective in the management of symptom aggravation and psychological stressors that patients undergo due to the chronic nature of the disease.

The naturopathic protocol should also include the mind-body approach to the management of the disease process through intervention such as hypnotherapy and cognitive behavioural therapy. Hypnotherapy is an effective approach in the management of fatigue, anxiety as well as other physical symptoms that are associated with irritable bowel syndrome resulting to an improvement in the quality of life of the patient. Other neurological approached to be included in the naturopathic protocol include acupuncture and moxibustion that produces an impact on the serotonergic and cholinergic neural transmission between the brain and the gastrointestinal tract. Lastly, probiotics such as L. plantarum 299v, B. Bacterium and L. Acidophilus are considered to be highly effective in the management of chronic and intermittent irritable bowel syndrome through alleviating symptoms such as abdominal pain, flatulence, bloating leading to an overall improvement in the quality of life of the patient. Despite the naturopathic pathway the pharmacologic approach is still beneficial for the improvement of symptoms to ensure improved quality of life among patients and therefore a combine approach could be more effective.

**Bibliography**

Bahrami, Hamedi, Salari and Noras (2016). Herbal Medicines for the Management of Irritable Bowel Syndrome: A systematic Review. 8(8).

Bertrand, Ghouzali and Guerin (2015). Glutamine Restores Tight Junctions Proteins Claudin-1 Expression in Colonic Mucosa of Patients with Diarrhoea-predominant Irritable Bowel Syndrome.

Card, T., Canavan, C. and West, J. (2014). The epidemiology of irritable bowel syndrome. *Clinical Epidemiology*, p.71.

Crowell, M. (2004). Role of serotonin in the pathophysiology of the irritable bowel syndrome.

El-Salhy, M. (2012). Irritable bowel syndrome: Diagnosis and pathogenesis. *World Journal of Gastroenterology*.

Grundman, O. and Yoon, S. (2014). Complementary and Alternative medicines in irritable bowel syndrome: An integrative view. *World Journal on Gastroenterology*, 20(2).

Hoveyda, Heneghan, Mahtani, Perera, Roberts and Glasziou (2009). A systematic review and meta-analysis; probiotics in the treatment of irritable bowel syndrome. 9(15).

Kajander, Krogius-Kurikka, Rinttila, Karjalainen, Palva and Korpela (2007). Effects of Multi-species probiotic supplementation on intestinal microbiota in irritable bowel syndrome.

Khanna, R., McDonald, J. and Lavesque, B. (2014). Peppermint Oil for the Treatment of Irritable Bowel Syndrome: A Systematic Review and Meta-Analysis. 48(6).

Lehrer, J. (2017). Irritable Bowel Syndrome. [online] Available at: http://emedicine.medscape.com/article/180389-overview [Accessed 5 May 2017].

Magge, S. and Lembo, A. (2011). Complementary and Alternative Medicine for the Irritable Bowel Syndrome.

Magge, S. and Wolf, J. (2013). Complementary and alternative medicine and mind-body therapies for the treatment of irritable bowel syndrome in women. 9(6).

Pizzorno J, Murray M (2007).*Textbook of natural medicine.e-dition. Missouri:Elsevier*

Pittler and Ernst (1998). Peppermint Oil for Irritable Bowel Syndrome: A Critical Review and Meta-analysis. *Journal on gastroenterology*, 93(7).

Portincasa, Bonfrate, Scribano, Kohn and Caporaso (2016). Curcumin and Fennel Essential Oil Improve Symptoms and Quality of life in Patients with Irritable Bowel Syndrome.

Saha, L. (2014). Irritable bowel syndrome: Pathogenesis, diagnosis, treatment, and evidence-based medicine. *World Journal of Gastroenterology*, 20(22).

Tilburg, Palsson, Ringel and Whitehead (2014). Is ginger effective for the treatment of irritable bowel syndrome? A double blind randomized controlled pilot trial.

Yoon, S., Grundmann, O., Koepp, L. and Farrell, L. (2011). Management of Irritable Bowel Syndrome (IBS) in Adults: Conventional and Complimentary/Alternative Approaches. 16(2).