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Avocado Consumption For Alleviating Chronic Constipation: A Comprehensive Review

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ABSTRACT

Chronic constipation is a common gastrointestinal disorder that significantly impacts the quality of life and can lead to various health complications. Traditional management approaches, including fiber supplements, laxatives, and lifestyle changes, offer varying degrees of effectiveness, often with unwanted side effects. Recently, dietary modifications have gained interest as a natural and potentially effective solution for constipation relief. This comprehensive review examines the potential of avocado consumption in alleviating chronic constipation, exploring the underlying mechanisms by which its nutrients influence gastrointestinal motility and stool consistency. Avocados can be recommended to people who are suffering from constipation and could be given to elderly people on their regular diet due to the presence of a good amount of fiber content, magnesium, and fats, as well as the ability to maintain hydration. Further research could be done to investigate how avocado-derived prebiotic fibers influence gut flora, improving motility and stool consistency.

KEYWORDS: Constipation, avocado, fiber content, magnesium, good fats.

INTRODUCTION

Chronic constipation is a common digestive disorder characterized by infrequent bowel movements, difficulty in passing stools, or a combination of both over a prolonged period. It affects individuals of all ages and can significantly impact quality of life, leading to discomfort, bloating, and even physical pain.[1] Various factors, such as dietary habits, physical inactivity, certain medications, and underlying medical conditions, contribute to its development[2]. While occasional constipation is usually harmless, chronic cases may require medical attention to prevent complications and ensure effective management of symptoms. Understanding its causes and treatment options is essential for proper care. It is a common complaint among the elderly.[3] Constipation in the elderly is not simply related to aging; it is a major feature of disorders of colorectal motility.[4] In the past, chemical drugs were not publicly available, or people lived in settlements where chemical drugs could not be supplied conveniently. As a result, therapists prescribed medicinal plants to relieve pains and treat diseases with reference to ethnobotany and empirically. Furthermore, medicinal

plants have been widely welcomed during the past two decades because they are natural and efficacious and cause fewer side effects than chemical drugs. Among the different available natural sources, avocado has emerged as a potential dietary aid due to its unique nutritional profile.[5] Avocados are rich in dietary fiber, healthy fats, and various vitamins and minerals, making them a valuable addition to a diet focused on digestive health. The high fiber content in avocados, along with their smooth, easily digestible texture, may contribute to improved bowel regularity and alleviate symptoms of chronic constipation. Additionally, the presence of beneficial fats in avocados aids in lubricating the intestines, potentially facilitating smoother bowel movements.[6]

CURRENT SITUATION OF CHRONIC CONSTIPATION

Millions of individuals of all ages and geographical locations suffer from chronic constipation, which is becoming a major global health concern. Chronic constipation (Figure 1) is one of the most prevalent gastrointestinal diagnoses in ambulatory medicine clinics, with a 15% global incidence. In the US, it is also a significant reason for referrals to colorectal and gastroenterologists.[7] Women are more prone than males to experience constipation, which is more frequent after menopause and more likely to happen during specific periods, such as pregnancy and the days before menstruation. The prevalence of chronic constipation is higher in women than in males; research indicates that women are up to three times more likely to suffer from it. The main causes of this gender disparity are physiological and hormonal. Bowel motions in women can be slowed down by hormonal changes, especially those associated with menstruation, pregnancy, and menopause. Because of elevated progesterone levels and intestinal pressure, pregnancy raises the risk. Reduced estrogen levels in postmenopausal women can cause constipation.[8]

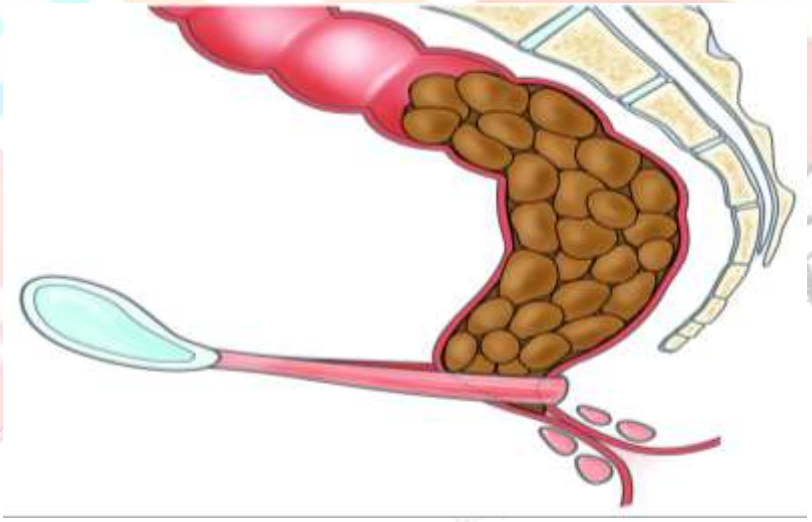

Figure 1: Constipation

In India, constipation is a serious and expanding health issue that affects people of all ages, both men and women. Stress, dehydration, sedentary lifestyles, and inadequate dietary fiber intake are the main causes of this problem.[9] Poor eating habits, such as consuming a lot of processed foods and not exercising enough, make the urban population more susceptible. Constipation is more common in women, according to studies, primarily because of hormonal changes, pregnancy, and other physiological causes. Men are also impacted, frequently as a result of stress and erratic eating habits. Furthermore, the issue is made worse by a lack of knowledge about the significance of adequate hydration and a balanced diet. Many people experience chronic constipation despite the widespread use of over-the-counter drugs, underscoring the need for improved lifestyle management and knowledge.[10]

CLASSIFICATION OF CONSTIPATION

Constipation can occur due to different reasons, according to the mechanism of occurrence they can be classified into below classes:

1. **Constipation in Slow Transit**
   A persistent illness known as slow transit constipation (STC) causes the passage of feces through the colon to be noticeably slowed. Infrequent bowel movements, frequently less than three per week, are the result of reduced muscle or nerve activity in the colon. Bloating, firm, dry feces that are difficult to pass, and abdominal pain are all possible symptoms of STC. Neuromuscular dysfunction, hormonal abnormalities, certain drugs, and dietary factors like inadequate fiber intake are some of the causes. Tests like colonic transit studies and anorectal manometers, which measure how effectively the colon transports stool, are commonly used in diagnosis. Treatment involves taking drugs like prokinetics or laxatives in addition to dietary changes like drinking more water and fiber. In extreme situations, biofeedback treatment or surgery could be taken into consideration to enhance the function of the bowels.[11]

2. **Constipation during normal transit**
   Stool passes through the colon normally, but many still have trouble passing it. This condition is called normal transit constipation, or functional constipation. The individual may experience firm stools, infrequent bowel motions, or a feeling of incomplete evacuation even with regular transit. Lifestyle factors like dehydration, a lack of physical activity, or an inadequate fiber diet are frequently linked to this form of constipation. Routine adjustments and stress might also be factors. Treatment normally consists of increased fiber and hydration consumption, frequent exercise, and occasionally the use of laxatives or stool softeners to aid bowel movements. normally, the diagnosis shows no underlying problems in bowel function.[12]

3. **The elderly population**
   Due to a combination of age-related physiological changes and lifestyle variables, chronic constipation is very common in the senior population. Slower bowel movements are caused by a natural decrease in colonic motility, a decrease in physical activity, and a decrease in the amount of fluid and fiber consumed as people age. Elderly people are also more likely to be on several drugs, including antidepressants, opioids, and calcium channel blockers, which may make constipation worse. Constipation risk is further increased by medical problems that are frequent in older persons, such as diabetes, Parkinson's disease, hypothyroidism, and other neurological illnesses. Constipation can be harder to manage when there is reduced mobility, cognitive decline, and loss of independence. This increases the risk of problems such fecal impaction. Constipation also results in discomfort, a lower quality of life, and a greater need for laxatives or medical treatments in many older people. A comprehensive strategy is needed for effective management, which includes dietary adjustments, exercise, and a careful examination of prescriptions. This frequently necessitates that healthcare professionals modify treatment regimens to meet the unique requirements of senior citizens.[13]

4. **Disorders of Defecation**
   Defecators disorders of constipation, sometimes referred to as outlet dysfunction constipation, are conditions in which the muscles or nerves involved in defecation malfunction, making it difficult to void stool. Because the pelvic floor muscles or anal sphincter are not functioning properly, people with this illness have difficulty passing stool, even though their transit and consistency are normal. Pelvic floor dysfunction, in which the muscles are either overly tight or too weak, and dyssynergic defecation, in which the muscles do not coordinate during bowel motions, are common reasons. Excessive straining, a sense of incomplete evacuation, and the requirement for manual assistance to pass feces are among the symptoms. Tests that assess muscular coordination, such as defecography

and an rectal manometer, are frequently used in diagnosis. Pelvic floor exercises, dietary modifications to facilitate defecation, and biofeedback therapy to retrain the muscles are usually the mainstays of treatment.[14]

CAUSES OF CHRONIC CONSTIPATION

A common gastrointestinal condition known as chronic constipation is typified by difficulties passing stools and infrequent bowel movements. It can have a big effect on someone's quality of life. It may be brought on by structural lesions of the colon (e.g., colon cancer, colon stricture, or narrowing), medical conditions like diabetes, thyroid issues, Parkinson's disease, or pregnancy, or drugs like narcotics for pain, calcium channel blockers for blood pressure, antispasmodics, and antiseizure drugs. In certain situations, changing to a different drug may help with the symptoms.[15] Common causes of constipation are listed below in Table 1.

Table1: Causes of constipation[16-20]

NO	Condition	Possible Cause
1.	Gastrointestinal cause	Irritablebowelsyndrome Upper gastrointestinal disorder Anal and rectal disorders Hemorrhoids and anal fissure Ulcerative proctitis TumorsHernia Volvulus of the bowel Syphilis Tuberculosis Helminthic infection Lymphogranulomavenereum Hirschsprnugs disease
2.	Metabolic endendocrine disorder	Diabetes mellitus with neuropathy Hypothyroidism Panhypopituitarism, Pheochromocytoma, Hypercalcemia, Enteric glucagon excess
3.	Pregnancy	Depressed gut motility Increase fluid absorption from the colon Decreased physical activity Dietary changes Inadequate fluid intake Low dietary fiber Use of iron salt
4.	Neurogenic causes	Disease of central nervous system Trauma of brain specially medulla, Spinal cord injury Tumors of central nervous system Cerebrovascular accidents Parkinson’s disease
5.	Psychogenic causes	Ignoring or postponing urge of defection Psychiatric condition

6.	Medication	Inhibitors of PG Analgesic Opiate drug Anticholinergic Antihistaminic drug Antiparkinsonian agents (Benzatropine) Phenothiazines Tricyclic antidepressant Antacids containing calcium Barium sulfate Calcium channel blockers Clonidine Diuretics(Non potassium sparing) Ganglionic blockers Iron preparations Muscle blockers (d-tuberculin) Non-steroidal anti-inflammatory agents Polystyrene sodium sulfonate

TREATMENTS AVAILABLE FOR CHRONIC CONSTIPATION

Chronic constipation can be managed through a range of treatments that address underlying causes and aim to improve bowel regularity. Here are some commonly used treatments in Table 2.[21-45]

Table 2: commonly used treatments in chronic constipation[21-45]

Sl no.	Drugs	Mechanism
	Ayurveda medicines	
1	Triphala	A herbal blend of three fruits (Amalaki, Bibhitaki, and Heritage) known for its laxative properties
2	Castor oil	Used as a natural laxative to promote bowel movements.
3	Psyllium husk	A fiber-rich supplement that aids in digestion and relieves constipation.
4	Herbal teas	Formulations containing senna, licorice root, or fennel seeds to stimulate bowel movements
5	Abhyanga	Warm oil massage to improve circulation and stimulate the digestive system.
6	Cascara	By encouraging intestinal muscular spasms that facilitate bowel movements, cascara sagrada helps alleviate persistent constipation. It functions as a laxative and natural stimulant.
7	Senna	By energizing the intestinal muscles and encouraging bowel movements, senna helps alleviate persistent constipation. It functions as a natural laxative and stimulant.
	Homeopath medicines	
8	Nux Vomica	Frequently used to treat constipation brought on by stress, overindulgence in food or drink, or a sedentary lifestyle. Individuals may experience an insufficient bowel movement and experience an unsuccessful urge to pass stool.
9	Bryonia Alba	Used to treat dry mouth and stiff, dry stools caused by constipation. The stool may be difficult for the patient to pass and they may feel the urge to strain.
10	Lycopodium	Given to people who have bloating and flatulence, along with constipation. Stool tends to be hard, difficult to pass, and the person feels discomfort after eating.

11	Alumina	Ideal for people with slow bowel movements who don't feel the need to void, this product is frequently used by older adults. Stools are dry, hard, and challenging to get rid of.
12	Opium	When constipation is accompanied by a total absence of urge to evacuate feces, this therapy is recommended. The round, firm stool is frequently referred to as "black balls."
13	Silicea	Given to people who have a propensity to strain a lot to pass feces. After being partially ejected, the feces may retreat back into the rectum.
14	Graphite	When diarrhea and constipation alternate, this is used. The skin surrounding the anus may be painful or cracked, and the stool may be big, firm, and knotty.
Allopathy medicines		
15	Polyethylene Glycol	An osmotic laxative that softens and increases the frequency of bowel movements by retaining water in the stool. frequently used to treat constipation, both temporarily and permanently.
16	Lactulose	An artificial disaccharide that acts as an osmotic laxative by attracting water into the colon and facilitating the passage of feces. It works particularly well for persistent constipation.
17	Bisacodyl	A stimulant laxative that helps move stool through the intestines by causing contractions of the gut muscles (peristalsis).
18	Lubiprostone	Improves stool passage and increases fluid secretion by activating chloride channels in the intestines. For idiopathic persistent constipation.
19	Naloxegol	An opioid receptor antagonist that reduces constipation without compromising pain treatment by selectively targeting opioid receptors in the GI tract.
20	Prucalopride	5-HT4 receptor agonist that promotes intestinal motility and makes bowel motions easier.
21	Psyllium Husk	Bulk-forming laxative that promotes bowel movements by absorbing water to create a large stool.
22	Methylcellulose	Water-absorbing bulk-forming laxative that promotes peristalsis and gives feces more volume.
23	Glycerin Suppositories	Facilitates the passage of stool by drawing water into it and inducing rectal spasms.
24	Magnesium Hydroxide	osmotic laxative that draws water into the intestines to soften stools and enhance bowel motions.
25	Polycarbophil	By absorbing water in the intestines, boosting stool volume, and encouraging regular bowel movements, it helps cure constipation.
26	Magnesium citrate	By attracting water into the intestines, softening the stool, and promoting bowel movements, magnesium citrate is used to treat constipation.

27	Sodium biphosphate	By increasing the amount of water in the intestines and encouraging bowel movements, sodium biphosphate is used as a laxative to treat persistent constipation.
28	Sorbitol	As an osmotic laxative that draws water into the large intestine to promote bowel movements,
29	Tegaserod	Tegaserod promotes the passage of stool through the intestines by activating serotonin receptors in the intestines, thereby alleviating chronic constipation.
Microbiological Management		
Probiotics, particularly *Bifidobacterium lactis*, have been shown to improve stool consistency, increase frequency, and reduce both regional and global gut transit time. prebiotic, shown a selective effect on the human gut microbiota, particularly on *bifidobacteria*, anaerobic bacteria, and Bilophila, and enhanced quality-of-life measures associated with constipation.		
Surgical treatment		
When refractory constipation is not a symptom of a panenteric motility disease and is linked to colonic inertia, surgery may be helpful.		

SPECIAL FEATURES OF AVOCADO

The fruit of the avocado tree, *Persea americana*, family Lauraceae is termed as "avocado"(figure 2). Avocados primarily grow in regions with warm, tropical or subtropical climates. They thrive in countries like Mexico (the largest producer), followed by countries like the United States (particularly California and Florida), Peru, Chile, Colombia, and Spain.[44-45] Because of its rich texture and flavor, this fruit is used in a variety of recipes and is valued for its high nutritional content. Because of its rich phytochemical and nutritional makeup, avocado fruit is becoming more and more popular worldwide and is a valuable source of numerous medicinal benefits. Peel, seed, and pulp waste are produced in enormous quantities during the processing of avocado fruit. Avocado wastes are a great source of vitamins, minerals, soluble sugars, fatty acids, total lipids, and amino acids. Additionally, they are a rich source of organic acids, hydrocarbons, glycosides, carotenoids, flavonoids, alkaloids, polyphenols, and tocopherols.[46] Avocado wastes have a variety of medicinal qualities, including being cytotoxic, hypolipidemic, antioxidant, anti-inflammatory, antibacterial, anticancer, antidiabetic, neuroprotective, and wound healing. These qualities stem from its nutritional and phytochemical makeup. Additionally, these are used to make probiotics, thickening agents, candies, analog rice, biofilms, food preservatives, biodegradable films, and more. Therefore, it is possible to infer from the literature that encouraging the population to use avocado waste will improve their nutritional status and general well-being.[47-48] Different minerals as well as other phytochemical constituents are listed below in table 3 and table 4.

Figure 2: Avocado

Table 3: Different macronutrients and micronutrients present in avocado[49-52]

Nutrients		Amount
Macronutrients	Carbohydrate	1%
	Saturated fat	5%
	Polyunsaturated fat	15%
	Fibers	11%
Micronutrients	Vitamin B_1	4%
	Vitamin B_2	8%
	Vitamin B_3	6%
	Vitamin B5	15%
	Vitamin B6	6%
	Vitamin B9	10%
	Vitamin C	4%
	Vitamin E	6%
	Vitamin K	10%
	Iron	2%
	Manganese	4%
	Magnesium	4%
	Copper	10%
	Zinc	2%

Table 4: Different phytoactive constituents present in avocado[53-57]

Sl. No.	Phytoactive constituent	Amount (µg/ml)
1	Avocadenol A	24.0
2	Avocadenol B	33.8
3	Avocadenol C	55.5
4	Avocadoin	>200
5	Ethambutol	6.25
6	Lutein	180–250
7	Beta-Sitosterol	75–90
8	Vitamin E (α-Tocopherol)	20–30
9	Zeaxanthin	10–15
10	Alpha-Carotene	1–3
11	Folic Acid	0.7–1.2
12	Glutathione	15–25
13	P-Coumaric Acid	2–4

AVOCADO: A CONSTIPATION-RELIEVING AGENT

Avocado is rich in dietary fiber and contains healthy fats, both of which play a significant role in relieving constipation. Key phytochemical constituents in avocado that support digestion include:

1. **Dietary Fiber**: Avocado is high in both soluble and insoluble fiber. Dietary fiber, especially insoluble fiber adds bulk to the stool. It absorbs water and swells in the digestive tract, making the stool larger and softer. This increased bulk stimulates peristalsis, the wave-like muscle contractions that move stool through the intestines, thereby helping it pass more easily while insoluble fiber adds bulk, which promotes regular bowel movements.Soluble fiber (found in oats, beans, and fruits) forms a gel-like substance when it dissolves in water, which can make the stool softer and easier to pass.[58] This reduces strain during bowel movements and helps prevent hard, dry stools associated with constipation.[59]

2. **Oleic Acid**: Oleic acid provides lubrication to the digestive tract, which can help soften stools and ease their passage through the intestines.It can stimulate the production of bile from the liver, which emulsifies fats and supports the digestive process, promoting regular bowel movements. [60] Oleic acid has anti-inflammatory properties that may help reduce inflammation in the intestines, which can sometimes contribute to constipation. By promoting a healthier balance of gut bacteria, oleic acid may support bowel regularity. Oleic acid may stimulate peristalsis, the rhythmic contractions of the intestines, which aids in the movement of stool through the colon. This is a monounsaturated fatty acid that may stimulate the digestive tract and support smooth passage through the intestines. [61]

3. **Magnesium**: Although not a phytochemical, avocado is also rich in magnesium, which can support muscle relaxation in the digestive tract and improve bowel movements.[62] They can create an osmotic gradient that attracts water into the intestines. This extra water softens the stool, making it easier to pass. Increased water in the intestines also helps to stimulate peristalsis, the rhythmic contractions of the intestines that help push stool through the digestive tract.[63]

4. **Phytosterols**: Phytosterols, being indigestible, contribute bulk to the stool. Increased stool mass can enhance peristalsis, the rhythmic contractions of the intestines, thereby promoting bowel movements and reducing constipation.Phytosterols may influence gut microbiota composition by acting as prebiotics.[64] This promotes the growth of beneficial bacteria in the colon, which produce short-chain fatty acids (SCFAs) as byproducts. SCFAs help maintain gut health and regularity, enhancing water and electrolyte absorption in the intestines to prevent hard stools. Phytosterols inhibit cholesterol absorption, which may positively impact bile acid metabolism. Increased bile acids in the intestines can soften stools and stimulate bowel movements, further easing constipation.[65]

DISCUSSION

Avocados can be the natural solution for persistent constipation. Because of its many nutritional benefits, avocado is frequently cited as a food that can help people who suffer from persistent constipation. All fibers work together to promote easier digestion by regulating bowel movements, both soluble and insoluble fiber are abundant in avocados. While soluble fiber aids in water absorption and softens the stool, insoluble fiber gives the stool volume and facilitates easier passage through the digestive system. Healthy fats, especially monounsaturated fats, which help support gut health, are also abundant in avocados. By lubricating the digestive tract, fats facilitate the passage of feces and avoid hard ones. Magnesium, another element found in avocados, is essential for the proper operation of all muscles, including those in the digestive system. Smoother bowel motions can be achieved by drawing water into the intestines and relaxing them with magnesium. According to certain research, avocado fiber may have a prebiotic effect, encouraging the development of beneficial intestinal flora. Regular digestion and the avoidance of constipation depend on a balanced gut microbiota.

CONCLUSION

Avocados can be recommended to the people who are suffering from constipation and could be given to elderly people with their regular diet due to the presence of good amount of fiber content, magnesium, good fats, and ability to maintain hydration. When combined with enough water and other foods high in fiber, it can help maintain long-term digestive health and possibly reduce the symptoms of chronic constipation.

Avocado's fiber content may foster beneficial changes in the gut microbiome, potentially impacting chronic constipation. Research could investigate how avocado-derived prebiotic fibers influence gut flora, improving motility and stool consistency. Future studies might identify specific strains of bacteria that thrive with avocado consumption, leading to more targeted dietary or probiotic therapies. Research may be done on the development of avocado-based products like avocado-fiber supplements, snacks, and beverages.

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