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Ayurveda Treatment Outcomes for Osteoarthritis

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Ayurveda is the oldest system of medicine in the world and by far the most commonly practiced form of non-allopathic medicine in India, particularly in rural India, where 70% of the population lives. Ayurveda is also playing an increasing role in European and North America, since its broad introduction in Western countries in the 1980s. At present, it is one of the fastest-growing CAM therapies worldwide [1]. Osteoarthritis (OA) is a very commonest type of arthritis generally found in older age group. Osteoarthritis is known as *Sandhi vata* in Ayurveda. It is a joint disorder caused by the erosion/breaking of cartilage that cushion bones at joints and causing pain, swelling and stiffness as bones rub together. The joints most commonly affected are the knees, hips, hands and spine. OA is the leading cause of disability in elderly persons and affects approximately 14-20% of all adults aged ≥25 years. The prevalence rate of OA is 38% in people over 45 years old and 70% in people over 65 years old thus, its prevalence and health impact increase with age. To address the prevalence, cost, and disability associated with OA, multiple organizations have been trying to understand pathogenesis of OA to reduce its incidence and to discover a disease-modifying OA drug that could slow or halt its progression.

The number Osteoarthritis patients in Ayurveda hospital and clinic of India have been increasing in recent years [2]. General People says that Ayurveda medicine and Panchakarma (detoxification technique) has promising relief effect in osteoarthritis. Researchers claimed that Ayurveda treatment outcome is better than or equal to conventional drug for improvement of pain and knee function [3]. Ayurveda has an elaborate disease classification system of rheumatic disorders as like modern medicine. Herbal and mineral formulations possessing such a combination that has preventive and therapeutic effects are described as Rasayana (immunomodulatory and facilitating regeneration) in Ayurveda. Rasayana therapies have been widely used by Ayurvedic physicians since ancient times to promote health and treat immune inflammatory and degenerative disorders. Ayurvedic medicinal plants have demonstrated remarkable biological effects, especially those of anti-inflammatory and immune-modulatory activities that are relevant and potentially useful to treatment of chronic musculoskeletal disorders. Several controlled drug trials were conducted to demonstrate efficacy and safety of standardized Ayurvedic drugs containing several plants mentioned in Ayurveda classics, for treatment of osteoarthritis (OA). The primary outcome of Ayurvedic medicinal plants have analgesic, anti-inflammatory, chondroprotection, soft tissue healing, anti-osteoporosis, immune-modulation, anti-lipogenesis, anabolic effect, and anti-oxidative stress. The secondary outcome of Ayurvedic anti-arthritis drugs and regimen are to improve digestion and metabolism, normalize the gut function and clear bowel movement [4-7].

The goal of OA treatment for medical profession is not only control symptoms but also prevent disease progression, minimize disability, and improve quality of life. Management of OA includes varied techniques and principles, both non pharmacologic and pharmacologic in nature. Prevention of OA is the best treatment option. Preventive measures are Limiting modifiable risk factors such as obesity, smoking, joint damage, and lack of adequate exercise that can have a significant effect on decreasing the risk of OA development. Non pharmacologic approaches include patient education, weight loss, exercise, physical and occupational therapy, assistive devices, acupuncture, ultrasound, and surgery. Obesity remains the most important and modifiable risk factor for the development of OA .Pharmacologic management OA cases by Anti-inflammatory drugs, often called as Non-Steroidal Anti-Inflammatory Drugs (NSAIDs) are helpful because they relieve pain and stiffness. These NSAIDs have no long term benefit to the patient rather well known adverse side effects. Further it may be dangerous in the elderly and in the presence of renal insufficiency and gastrointestinal disorders. Intra articular glucocorticoid injections may be preferable and effective in some cases. Surgery should be reserved as a last-resort effort to manage OA symptoms in patients whose disease is refractory to less-invasive management methods. Surgical interventions include total joint arthroplasty and joint lavage and debridement. There is no evidence demonstrating that lavage or debridement is more effective in relieving pain or improving function than nonsurgical treatment. Total joint replacement appears to be a successful therapy when joint pain severely limits a patient's ability to function [8]. The efficacy of glucosamine and chondroitin remains controversial. Glucosamine, which is naturally produced in the body, is an amino monosaccharide that acts as a substrate for glycosaminoglycan, proteoglycans, and hyaluronic acid to form articular cartilage. Chondroitin also serves as a building block for joint cartilage. The large-scale Glucosamine/Chondroitin Arthritis Intervention Trial (GAIT; N=1,583) failed to demonstrate a significant reduction in overall pain after 24 weeks in patients treated with glucosamine only, chondroitin only, or the combination of glucosamine plus chondroitin; however, a subgroup of patients with moderate-to-severe pain did experience significant pain reduction with the combination of glucosamine and chondroitin. Topical agents such as capsaicin and topical NSAIDs may offer an alternative in patients unable to tolerate systemic agents and may also be used as additive therapy. Though effective, opioids should be reserved for resistant cases and should be considered for short-term use only. The efficacy of intra-articular glucocorticoids, tramadol, and glucosamine with or without chondroitin is questionable; these agents may be tried when other options fail [9,10].

Although numerous modern treatments for various forms of OA have been identified, they suffer from various drawbacks, such as lack of efficacy, excessive side effects and high cost. Usually, treatment of OA requires treatment of the patient for their entire lifetime; therefore it should be effective, friendly, safe and cheap. The Ayurveda based bioactive molecules like Curcumin (from turmeric), resveratrol (red grapes, cranberries and peanuts), tea polyphenols, genistein (soy),

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quercetin (onions), silymarin (artichoke), guggulsterone (guggul), boswellic acid (salai guggul) and withanolides (ashwagandha) are regulate the pro-inflammatory cytokines (e.g. tumour necrosis factor and interleukin-1b)and pro-inflammatory enzymes that mediate the production of prostaglandins (e.g. cyclooxygenase-2) and leukotrienes (e.g. lipooxygenase), together with the expression of adhesion molecules and matrix metalloproteinases, and hyper proliferation of synovial fibroblasts. Gold compounds are reemployed for the treatment of arthritis. Rasa Raj Rasa, Brihat Vata chintamoni Rasa, Rhuama yoga gold, Rhumathro gold and other preparatory gold containing classical medicine have been prescribing by Ayurveda doctor for OA. Our experience with ten week administration of single dose of Rasa Raj Rasa, Aswagandha and Triphala churna along with local application of bala-aswagndha taila improve pain and mobility in OA patients. Gold molecule inhibits the release of HMGB1 by interfering with the activity of two helper molecules that ease HMGB1's release from the cell, interferon beta and nitric oxide. High mobility group protein (HMBG1) provokes inflammation, the key process underlying the development of rheumatoid arthritis. HMBG1 is a dual-function molecule, which means that it behaves one way when it's inside the nucleus of a cell, and quite another way when it's released from the cell. HMGB1 is a key player in transcription, the process that converts genetic information in DNA to its RNA equivalent. But when HMGB1 is released from the cell -- either through normal processes or cell death -- it becomes a stimulus to the immune system and enhances inflammation. HMGB1 is not produced evenly throughout the body," "There is an unusually high amount of it in the synovial tissue and fluid around the joints -- where arthritis occurs. Gold molecule has also immunosuppressant effect [10-13].

Ayurveda is one of the fastest growing traditional medicines but the evidence for its effectiveness is unsatisfactory or we can say that there is no convincing evidence that Ayurvedic medicine is effective in osteoarthritis (OA). Effectiveness of Ayurveda treatment in osteoarthritis (OA) is measured by improvements in pain, movement or general well-being. Scientifically, Randomized controlled trials (RCTs) provide the best type of evidence on whether any treatment works. Other types of study, where participants choose the treatments they take, are very difficult to interpret because those with more serious disease might have opted for one treatment and others with milder disease another. Also, participants who choose their treatment do so because they believe it'll be effective, which might influence how they respond to it and evaluate it [14]. The quality of RCTs can vary, which affects how reliable the results are. To show where results are less reliable, the trials included in this report were judged based on a scoring system called the Jadad scale. This system is commonly used to evaluate the quality of published RCTs in the field of Ayurveda medicine also. The Jadad scale has levels from 1 (very poor quality) to 5 (very good quality). Ayurveda medicine has some promising evidence to suggest that the compound works. The evidence will be from more than one study; however, there may also be some studies showing that it doesn't work. Therefore, we're still uncertain whether compounds in this category work or not. In scientific evaluation there should be some consistency to the evidence, which will come from more than one study, to suggest that the compound works. Ayurveda medicine comprises of various herbs with varying active molecules, therefore there's no consistent evidence across several studies to suggest that this compound is effective.

Ayurveda treatment outcome is better than conventional standard care in the treatment of OA. Ayurveda claims to be effective in treating chronic diseases of the musculoskeletal system. It uses complex and individually tailored interventions, including manual therapies, lifestyle and nutritional advice, dietary supplements, medication, yoga, and purification measures. Mean-value based medical strategies are avoided in the constitution-based Ayurvedic approach. Ayurvedic diagnosis involves a general investigation into a broad spectrum of internal and external conditions, including physiological, metabolic, kinetic, excretory and mental functions, life style, food habits, social and other factors, all capable of developing disharmonies within the patient's mind-body continuum. Ayurvedic principles, which cannot be directly equated with modern entities (and have to be explained in other ways, for example, dosha, agni, srotas, dhatu, mala, ama). These principles are found in distinct states and individual pathological constellations and may result in specific symptoms. There were limitatios of all andomized controlled studies on Ayurveda is that they have focused only on structural Western diagnoses and disease cognitions without considering the fundamental principles of the traditional Ayurvedic diagnostic approach. Gold containing classical Ayurveda medicine along with poly compound and panchakarma has better treatment outcome.

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