MEDICINAL HERBS USEFUL IN OSTEOPOROSIS

Hemant[1], Kamini Kaushal[2] and Ashwini Kumar Sharma[3]

[1]P.G. Scholar, Mob.:7206316256, E-mail: hemrajkvrj@gmail.com,[2]H.O.D., E-mail: drkaushal2002@yahoo.com and [3]Associate Professor, E-mail: drashwinisharma1972@gmail.com, PG Department of Dravyaguna, M.M.M. Govt. Ayurved College, Udaipur(Rajasthan). Corresponding Author: Hemant

Abstract: Osteoporosis is one of the most common bone disease characterised by reduced bone mineral density (BMD).In this condition bone become brittle and fragile from loss of tissue,typically as a result of harmonal change or deficiency of calcium or vitamin D. Lifestyle behaviors that increase osteoporosis risk include: calcium and/or vitamin D deficiency; little or no exercise, especially weight-bearing exercise; alcohol abuse; cigarette smoking. It is one of the most common reason for a breaking bone among the elder people. In india also 1 out of 8 males and 1 out of 3 female are suffering from osteoporosis. According to WHO Osteoporosis is second largest global health problem. Although there is no disease with osteoporosis name is found in ayurveda but similar to this disease asthiksay or Asthi Saushirya is found in brihatrayi of ayurveda. According to Ayurveda it is a vata disorder, in order to cure this disease then it make sense to take medicine that balance vata dosha and also helps in ossification and fracture healing.Ayurveda has lots of such herbs like Arjuna, Asthishrinkhla and mandukparni etc. detail study of these herbs will be presented in full paper.
Keywords: Osteoporosis, Asthikshay, Arjuna and Asthisrinkhla.

Introduction: Osteoporosis is one of the most common bone disease. It is characterized by reduced bone mineral density (BMD). According to the WHO criteria, osteoporosis is defined as a BMD that lies -2.5 standard deviation or more below the average value for young healthy women (T score of <-2.5 SD)[1]. Osteoporosis is defined as "a systemic skeletal disease characterized by low bone mass and micro-architectural deterioration of bone tissue leading to enhanced bone fragility and a consequent increase in fracture risk"[2]. Osteoporosis is a condition in which bone become brittle and fragile from loss of tissue, typically as a result of harmonal change or deficiency of calcium or vitamin D. It is one of the most common reason for a breaking bone among the elder people. Bones that commonly break include the back bone, hip and bone of forearm. Its clinical features are fragile fracture back pain, height loss, kyphosis, neck pain and stooped posture. There are 8.9 millions fracture per year world wide due to osteoporosis. Globally every 3rd women and every 5th man over age of 50 years is suffering from this disease. In india also 1 out of 8 males and 1 out of 3 female are suffering from osteoporosis. Total around 36 millions peoples are suffering from osteoporosis till 2013 in India. According to WHO Osteoporosis is second largest global health problem. In modern science this disease refers as porous bone or less dense bone due to poor metabolism.

Causes of Osteoporosis: The leading cause of osteoporosis is a lack of certain hormones, particularly estrogen in women and androgen in men. Women, especially those older than 60 years of age, are frequently diagnosed with the disease. Menopause is accompanied by lower estrogen levels and increases a woman's risk for osteoporosis. Other factors that may contribute to bone loss in this age group include inadequate intake of calcium and vitamin D. Other conditions that may lead to osteoporosis include overuse of corticosteroids (Cushing syndrome), thyroid problems, lack of muscle use, bone cancer, certain genetic disorders, use of certain medications, and problems such as low calcium in the diet. The following are risk factors for osteoporosis:

- Women are at a greater risk than men, especially women who are thin.
- Women who are white or Asian, especially those with a family member with osteoporosis, have a greater risk of developing osteoporosis than other women.
- Women who are postmenopausal, including those who have had early or surgically induced menopause, or abnormal or absence of menstrual periods, are at greater risk.
- Cigarette smokinglow amounts of calcium in the diet, heavy alcohol consumption, inactive lifestyle, and use of certain medications, such as corticosteroids and anticonvulsants, are also risk factors.
- Rheumatoid arthritis itself is a risk factor for osteoporosis.

Symptoms: A person is often not aware that he or she has osteoporosis until a fracture occurs. But there are occasionally symptoms of the disorder. They could include:

- Backache
- A gradual loss of height and an accompanying stooped posture
- Fractures of the spine, wrist, or hip

Diagnosis: The most common osteoporosis test is dual X-ray absorptiometry-- also called DXA or DEXA. It measures people's spine, hip, or total body bone density to help gauge fracture risk. Various methods can check bone density, including ultrasound and quantitative computed tomography (QCT). Most common test for osteoporosis is BMD(Bone Marrow Density). Patient having T score of BMD test -1 to -2.5 are osteopenic and having T score -2.5 and below are considered as osteoporic patients.

Treatment: Bisphosphonates are the most common medications prescribed for osteoporosis treatment. These include:

- Alendronate
- Risedronate
- Ibandronate
- Zoledronic acid

Diet rich in calcium and vitamin D or their supplements are beneficial in treatment of osteoporosis.

- Harmone replacement therapy

Ayurveda View: Two conditions mentioned in Ayurveda may be discussed in this regard. One is Asthi kshaya and the other is Asthi saushirya. Asthi saushirya is not mentioned as a separate condition but, as a symptom of Majja kshaya whereas, Asthi kshaya is mentioned as an independent condition. In Ayurveda under the heading "Asthi kshaya" many signs and symptoms described can closely be correlated with this clinical entity[3] According to Ayurveda Osteoporosis or Asthi Saushirya or Asthimajja kshay is a vata disorder, in order to cure this disease with medicine then it make sense to take medicine that balance vata dosha. Although there is no disease with osteoporosis name is found in ayurveda but similar to this disease asthiksay or Asthi Saushirya is found in brihatrayi of ayurveda. Osteoporosis can be co relate with loss of bone density as well as bone marrow. Bone marrow or majja is found in cavity of long bones. **Symptoms** of Asthi kshay[4] includes Roughness in body, pain in bones, joint, falling of hairs, teeth, nails. Where as symptom of Majja kshay[5] include hollowness of bones, joints pain, weakness in body. There are lots of herbs useful in this disease. Which have good content of calcium and vitamin D. This herbs has significant result in overcome from this disease. Few of this herbs are Arjuna, Asthishrinkhla, Mandukparni, Gangeruki, Mulethi, Guggula, Bakuchi, Mangrella shigru, Ashwagandha, Rasona, Amlaki etc Few of those are discussed below.

Arjuna (*Terminalia arjuna*): It is a tree of moist area,found everywhere in india but mostly in himalaya region,nagpur, madhyapradesh, bombay etc. It is a plant of combretaceae family. Its useful part is its bark. Its bark is most important constituent from medicinal point of view. Its ethanol extract contain tannins, carbonate of calcium, small amount of magnesium, Arjunin, arjunic etc. use of ethanol extract can inhibit osteoclast differentiation and beneficial safe and effective in management of osteoporosis [6].

Asthi shrinkhla (*Cissus quadrangularis*): It is a tendril belong to family vitaceae, found mostly in hot climate. Its useful part is kaand. Asthi shrinkhla is well known ayurvedic herb to treat fracture and its effectiveness on osteoporosis. Cissus quadrangularis appears to be very useful in treating diseases involving deficiency in the bone formation and fracture healing. The calcium ions, phos-phorous and phytoestrogens present in this plant extract may contribute in the process of ossification and fracture healing [7].

Mandukparni (*Centella asiatica*): It is a shrub belong to umbelliferae. It is mostly found in watery areas. It is described as medhya dravya. Synonyms are Manduki, Tvastri, Divya and Mahoushadhi. Its useful parts is panchanga. According to researches it has antianxietic, antioxident property and improves

microcirculation. Acharya Bhavprakash quoted it works on vata disorders and Asthi is site of vata. Hence it is helpful in bone formation in osteoporosis [8].

Bakuchi (*Psoralia corylifolia*): Psoralea corylifolia L. belongs to Fabaceae, the fruit is one of the commonly used herbs in formulas that are prescribed for the treatment of fractures, bone and joint diseases. Recent research suggests that P. corylifolia has potent oestrogenic effects and that its fruits may be a useful remedy for bone fractures, osteomalacia and osteoporosis. The extract of P. corylifolia fruits cannot only significantly increase the concentration of inorganic phosphorus in serum, but also evidently promote bone calcification in rats. Both the extracts of its fruits and seeds and two is of lavones (corylin and bavachin) isolated from this plant can stimulate bone formation and have potential antiosteoporotic activity [9].

Mulethi (*Glychirrhiza glabra*): the plant belongs to leguminosae family and the root portion collected from the plant is considered as a source of drug. Saponin glycosides and glycyrrhizin are the important chemical ingradients present in the drug which are required for good health. In addition to glycyrrhizin root also contain mixture of potassium and calcium salts of glycyrrhizinic acid, glabranin A and B, glycyrrhetol which have antiosteoporic property [10].

Sunthi (*Zingiber officinalis*): Ginger is a medicinal plant that has been widely used in Chinese, Ayurvedic and Unani system .Ginger officinalis is mainly used in treating sprains, muscular aches, cramps, constipation, indigestion. The major chemical constituent present is an essential oil called gingerols [11].

Rasona (*Allium sativum*): Allium sativum belongs to the genus Allium and family liliaceae. Garlic is one of the more commonly used health supplements in the world. It is said to be the world's second oldest medicine after Ephedra and is still one of the best and most popular herbal remedies. Garlic, best known for it's cardiovascular and lipid-lowering effects, has also been studied for its hypoglycemic effects and now is suggested for Osteoporosis.Its oil extract is proved to having antiosteoporic property [12].

Gangeran (*Grewia tenax*): The plant Grewia tenax belonging to the family Tiliaceae, the plant preparations are used for the treatment of bone fracture and for bone strengthening. Its root and fruits are well known household remedy for the treatment of osteoporosis, tissue and wound healing [13].

Guggula (*Commiphora mukula*): It is a shrub or small tree. The resin collected from the plant has got many medicinal properties. The major chemical constituents of Guggul resin include phytosterols, gugulipids, and guggulsterones. It was traditionally combined with other herbs for the treatment of arthritis, Osteoporosis and other bone deformities [14].

There are also few other Ayurvedical formulation which are good source of calcium and vitamin D which plays a significant role in osteoporosis.

- Praval pishti
- Godanti bhasm
- Kukkutandtvak bhasm
- Lakshadi guggulu
- Arjun kshir
- Mukta sukti bhasm
- Kapard bhasm
- Milk
- Honey

Yogas Aasan helpful in Osteoporosis

- Salabhasana
- Utkatasana
- Vrksasana
- Ardha Chandrasana
- Virabhadrasana
- Tadasana
- Savasana

Conclusion: Fear of this disease is increasing day by day and it is expected to quadruple in 2050.According to WHO Osteoporosis is second largest global health problem. Posr menopausal female are more prone to this disease. Modern science has only few medicine such as biophosphate, Calcium and vitamin supplements etc. But these medicine are not having very significant result in treating this disease. Moreover side effect of this drugs also not negligible. Harmone replacement therapy is mostly done as treatment procedure of this disease. But side effect of HRT are reported breast cancer etc in women which are life threatening Hence people are moving toward most ancient medicine system of world Ayurveda for getting relief in this problem. Ayurveda Has lots of herbs which has significant results in osteoporosis and not such harmful effect of this herbs are reported till now. Hence Adaptation of this medicinal herbs and their formulation by peoples will play a key role in eradicating this problem globally.

References
1. Gold, D.T. (1996). The clinical impact of vertebral fractures: quality of life in women with osteoporosis. *Bone*.18(3):185S–189S.
2. Donald Resnick. (1995). *Diagnosis of bones and joint disorders*, Volume 4, 3rdedition, Section 10, 51st Chapter, W.B.Saunders Company, Pennsylvania, pp. 1781-1846.
3. Shastri Kaviraj Ambikadutt. (2011). *Sushrut Samhita* with Ayurved tatva Sandipika Hindi commentary, Sutrasthan 15//13, edition, Choukhambha Sanskrit Sansthan, Varanasi. Pp.76
4. Shastri Kaviraj Ambikadutt. (2011). *Sushrut Samhita* with Ayurved tatva Sandipika Hindi commentary, Sutrasthan 15//13, edition, Choukhambha Sanskrit Sansthan, Varanasi. Pp.76
5. Shastri Kaviraj Ambikadutt. (2011). *Sushrut Samhita* with Ayurved tatva Sandipika Hindi commentary, Sutrasthan 15//13, edition, Choukhambha Sanskrit Sansthan, Varanasi. Shastri
6. Chunekara Krishna Chandra. (2015). *Bhavaprakasha Nighantu*, Chuakhambha Bharati Academy, pp.511
7. Chunekara Krishna Chandra. (2015). *Bhavaprakasha Nighantu,* Chuakhambha Bharati Academy, pp.403
8. Chunekara Krishna Chandra. (2015). *Bhavaprakasha Nighantu,* Chuakhambha Bharati Academy, pp. 448
9. Chunekara Krishna Chandra. (2015). *Bhavaprakasha Nighantu,* Chuakhambha Bharati Academy, pp. 119
10. Chunekara Krishna Chandra. (2015). *Bhavaprakasha Nighantu,* Chuakhambha Bharati Academy, pp.62
11. Chunekara Krishna Chandra. (2015). *Bhavaprakasha Nighantu,* Chuakhambha Bharati Academy, pp.13.
12. Chunekara Krishna Chandra. (2015). *Bhavaprakasha Nighantu,* Chuakhambha Bharati Academy, pp.127
13. Chunekara Krishna Chandra. (2015). *Bhavaprakasha Nighantu,* Chuakhambha Bharati Academy pp.356
14. Chunekara Krishna Chandra. (2015). *Bhavaprakasha Nighantu,* Chuakhambha Bharati Academy pp.196.