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Mini Review Paper

Anti-Atherosclerotic Effect of Parthenium

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Abstract

Now a days, Atherosclerosis is one of the burning problem . It is mostly seen in after 50 years of age but also may be seen in young adults. The main cause of its development is deposition of lipids. It is mainly seen in the walls of all major conduit arteries. Atherosclerosis is mostly responsible for MI but Sometimes after breaking it also forms thrombus that is most responsible for CVA. The rate of development is depends upon some risk factors like hypertension, tobacco smoking, diabetes mellitus, obesity, and genetic predisposition. In this article I like to emphasize the "Anti-atherosclerotic effect" of Homoeopathic proved medicine "Parthenium". Parthenium is a good acting remedy against malaria-that is well proved but how it reduces also the probability of atherosclerosis which is going to discus in the following paragraph.

Keywords: Atherosclerosis, Parthenium.

Introduction

The word "Parthenium" is derived from the Latin word *Parthenice*. Tanacetum Parthenium includes in the family of ASTERACEAE . Most commonly it is found in gardens and along road sides.

The first-Century Greek physician Dioscorides prescribed parthenium for "all hot inflammations"[1].

Common name—Chrysanthenum parthenium, Wild Quinine, Wild chamomile,Matricaria parthenium L, Parthenium hysterophorus.

It was used medicinally to save the life of someone who had fallen from the Parthenon during its construction in the 5th Century B.C-for this reason in the Ancient Greek this herb was called as "*Parthenium"*. It is also known as – "Medieval aspirin" or "the Aspirin of the 18th Century"[2].

Now after study the chemistry of the plant parthenium we know that the important biologically active principle is "Sesquiterpene lactones". After chemical analysis it was found that all parts of that plant contain toxin even also trichomes and pollens contain sesquiterpene lactones toxin. The major components of toxic being *Parthenolide* and other phenolic acids such as *Caffeic acid, Vanillic acid,Ansic acid,P-ansic acid,Chlorogenic acid and Parahydroxy benzoic acid.* Parthenolide is not found in the stems,but it is mostly found in the superficial leaf glands (0.2%-0.5%), and comprises upto 85% of the total sesquiterpene content[3].

Role of Caffeic acid preventing the formation of Atherosclerosis: Caffeic acid is naturally occuring Phenolic acid and in plants it is mainly remaining in form of its quinic acid ester . There are numerous plants including fruits,vegetables and coffea contains Caffeic acid and which hasbeen reported to decrease the risk of chronic disease such as cardiovascular disease like-*Atherosclerosis*[4].

Figure-1
The weed of Parthenium

The bio-marker for platelet activation is P-selectin which is a 140-k Da, type 1 transmembrane glycoprotein. P-selectin is involved in platelet-leukocyte interactions and platelet-endothelium interactions via binding to p-selectin ligand 1(PSGL-1) on leukocytes and endothelium[5]. These interactions are often implicated in pathophysiological progress of cardiovascular disease like-"Atherosclerosis"[6].

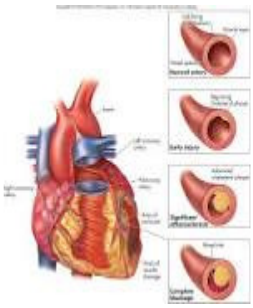

Figure-2
Formation of atherosclerosis

Now Cyclooxygenase (COX) enzymes regulate P-selectin expression and which also catalyzes the conversion of Arachidonic acid to Prostaglandin H_2, which is the intermediate molecule for prostacyclin and thromboxane A_2. The expression of the P-selectin protein has been reported to be greatly modulated by COX enzyme activity.

Membrane Phospholipid
↓Phospholipage A_2
Arachidonic acid
↓
Cyclooxygenases (COX 1 & COX 2)
↓
PGG_2
↓
PGH_2
↓
Prostaglandins, Prostacyclins
and
Thromboxanes

Figure-3
Flow chart of preparation of Thromboxane

Arachidonic acid is a lipid found in foods such as red meat and eggs. In the body, arachidonic acid is converted into prostaglandins with the help of the proteins cyclooxygenase-1 and cyclooxygenase-2 (COX-1 and COX-2) by catalyze reactions. Prostaglandin H2 is the precursor of thromboxane A_2. Thromboxane A_2 helps to aggregate the platelets and also helps in formation of platelet plug and thereby formation of thrombus. Finally thrombus may accumulate and helps to formation of atherosclerosis.

Now Caffeic acid inhibited the release of arachidonic acid from cell membranes, suppresed the enzyme activities of COX-1 and COX-2 and inhibition the activation of COX-2 gene expression[4].

Conclusion

Parthenium is a proved medicine, first Dr.Willium Boericke discussed in his *"Pocket Manual of Homeopathic Materia Medica & Repertory"*[7]. It is a well proved medicine for malaria but there mention only "it also indicated for slow pulse". On the basis of this symptom i like to establish the theory that it has also" anti-atherosclerotic effect" and how it reduces the probability of atherosclerosis has been discussed earlier.

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