ABSTRACT

Atherosclerosis is not only a degenerative process but more likely an active process which involves specific substances of a chronic inflammation process and repair substances of the artery wall. *(response to injury* hypothesis: Russel Ross, 1986)

Atherosclerosis occurres through a complex process including pathologic processes such as endothelial disfunction, monocyte recruitment, inflammation, muscle cell proliferation, lipid cell accumulation & oxidation, necrosis, calcification & thrombosis.

The objective of this study was to determine the predictors for early phase of atherosclerosis, especially for F2-isoprostane.

There are severe risk factors which may cause atherosclerosis i.e *Dyslipidemia, Diabetes Mellitus, Hypertension, Hyperhomocysteine, Smoking, Infection , etc.*

Therefore, it is difficult to detect the process of atherosclerosis in human beings. The most reliable test is by applying Immunohistochemistry of the artery. The researcher tries to observe the atherosclerosis process in rat species using *Novergitus strain webstar*. Dyslipidemia is developed by giving atherogenic feeding consisting of Cholesterol 2%, Cholic Acid 2%, Pig oil 1%

LDL-Cholesterol when oxidated by free radicals will form Ox-LDL followed by : 1. *F2-isoprostane, 2. Antibody to oxidated LDL-Cholesterol, 3. Nitrotyrosine, 4. Conjugated Diene, 5. Peroxide lipid.*

F2-isoprostane seems to be the specific biomarker.F2-isoprostane is an isomer of PGF2a and modified oxidated product of Non cyclooxygenase of Arachnoid acid which is produced by the influence of free radical attack to phospholipids of the cell membrane or LDL Cholesterol in the circulation. In vivo this compound is the indicator of specific lipid oxidation with a high sensitivity.

Therefore, F2-isoprostane is believed as the ***Gold Standard*** and is determined either sero-immunological in plasma or histopathological in tissues which is an early indicator of atherosclerosis.

F2-isoprostane occurring in sub-endothelium tissues is caused by the formation of Ox-LDL, in which Ox-LDL undergoes phagocytosis by macrophage forming Foam Cell.

According to research F2-isoprostane increased in serum of Dyslipidemic rats (28.06 $\pm$ 8.26 ng/dl) compared to normal rats (21.99 $\pm$ 5.70 ng/dl).

F2 isoprostane appeared firstly in the early phase of atherogenesis process. F2-isoprostane in tissues is more specific and sensitive compared to F2-isoprostane in plasma.

Factors following after the appearance of F2-isoprostane are : PAI-1, NO, vWF and VCAM-1.

Key Word : *LDL Cholesterol, Foam Cell, Macrophage, F2-isoprostane.*