

STATINS

Effects On Lipids

Author :

Anoosh Barzigar MD.

Mahmoodreza Barzigar. MD

Bahareh NArzigar . MD

Mehrdadreza Barzigar. MD

LIPID- REGULATING MECHANISMAND EFFECTS

regulating agents -LIPID	Mechanisms	Effects on lipids
Bile- acids sequestrants		
١)Cholestyramine	↓Intrahepatic cholestrol by nonspecific binding of bileacids	LDL-c ↓ ١٥-٣٠%
٢)Cholestipol		HDL-c ↑ ٣-٥%
٣)Colestevlam	↑activity of LDL receptors	TG No change or ↑

LIPID- REGULATING MECHANISMAND EFFECTS

LIPID- regulating agents	Mechanisms	Effects on lipids
Nicotinic acid		
	↓ Production of VLDL	LDL-c ↓ ٥-٢٥%
	↓ Mobilization of free fatty acids from peripheral adipocytes	HDL-c ↑ ١٥-٣٥%
		TG ↓ ٢٠-٥٠%

LIPID- REGULATING MECHANISM AND EFFECTS

LIPID- regulating agents	Mechanisms	Effects on lipids
HMG- CoA reductase inhibitors		
1) Atorvastatin	↓ In cholesterol synthesis caused by partial inhibition of HMG- CoA reductase	LDL-c ↓ 18-60% HDL-c ↓ 5-15% TG ↓ 7-37%
2) Fluvastatin		
3) Lovastatin		
4) Pravastatin		
5) simvastatin		

LIPID- REGULATING MECHANISM AND EFFECTS

LIPID- regulating agents	Mechanisms	Effects on lipids
Fibric – acid derivatives		
1) Bezafibrate	↑ Activity of lipoprotein lipase ↓ Release of free fatty acids from peripheral adipose tissue	LDL-c ↓ 5-20% with high LDL-c; may ↑ with high TG HDL-c ↑ 10-20% TG ↓ 20 - 50%
2) Ciprofibrate		
3) Clofibrate		
4) Fenofibrate		
5) Gemfibrozil		

LIPID- REGULATING MECHANISMAND EFFECTS

LIPID- regulating agents	Mechanisms	Effects on lipids
Cholesterol absorption inhibitors		
Eztimibe	↓ Intestinal absorption of cholestrol	LDL-c ↓ 1^8% LDL-c ↑ 1% TG ↓ ^%

Antiatherosclerotic properties of statins

Statin	Endothelial dilatation	LDL oxidation resistance	VSMC proliferation
Lovastatin	↑	↑	↓
Pravastatin	↑	↑	Neutral
Simvastatin	↑, Neutral	↑	↓
Fluvastatin	----	N/A	↓
Atorvastatin	N/A	N/A	↓

ADVERSE EFFECTS OF Lovastatin

Effects on the blood

- 1) Haemolytic anaemia (this adverse effect was not seen when the patient was given simvastatin)
- 2) Lympho adenopathy
- 3) Thrombocytopenia
- 4) Petichea

Effects on cardio vascular system

- 1) Palpitation
- 2) Syncope
- 3) Vasodilatation
- 4) Ortostatic hypotension
- 5) Arrhythmia
- 6) Angina pectoris
- 7) Phelebitis

Effects on the eyes

- 1) Lens opacities were found in 13 of 101 patients taking lovastatin following an 18-week study.
- 2) blurred vision
- 3) conjunctivitis
- 4) Cataract
- 5) Glaucoma

Effects on the nervous system

- 1) Headache
- 2) Taste and smell disorder
- 3) Eye movement disorder
- 4) Tremor
- 5) Peripheral neuropathy
- 6) Hypertonia
- 7) Hyposthesia
- 8) Facial paralysis
- 9) Torticoli
- 10) Paraesthesias

Effects on sexual function

- 1) Low sperm count
- 2) decreased libido
- 3) Abnormal erection

Effects on skeletal muscle

- 1) Muscle disorders
- 2) Myopathy
- 3) Rhabdomyolysis
- 4) Neck rigidity
- 5) tendon disorder

Effects on the Urogenital system

- 1) Cystitis
- 2) Renal stone
- 3) Albominuria
- 4) Nephritis
- 5) Retension
- 6) Urinary frequency
- 7) Urinary incontinance
- 8) Nocturia
- 9) Hematuria

Effects on skin

- 1) Skin nodules
- 2) Dryness
- 3) Contact dermatitis
- 4) Acnea
- 5) Pruritis

- ٦) Eczema
- ٧) Skin ulcer
- ٨) Skin rashes

Effects on GI system

- ١) Hepatitis
- ٢) Cholastatic jaundice
- ٣) Gastro enteritis
- ٤) colitis
- ٥) Rectal bleeding
- ٦) Esophagitis
- ٧) Oral ulcer
- ٨) Deodonal ulcer
- ٩) Hematmes and melena
- ١٠) Constipation
- ١١) Eructation

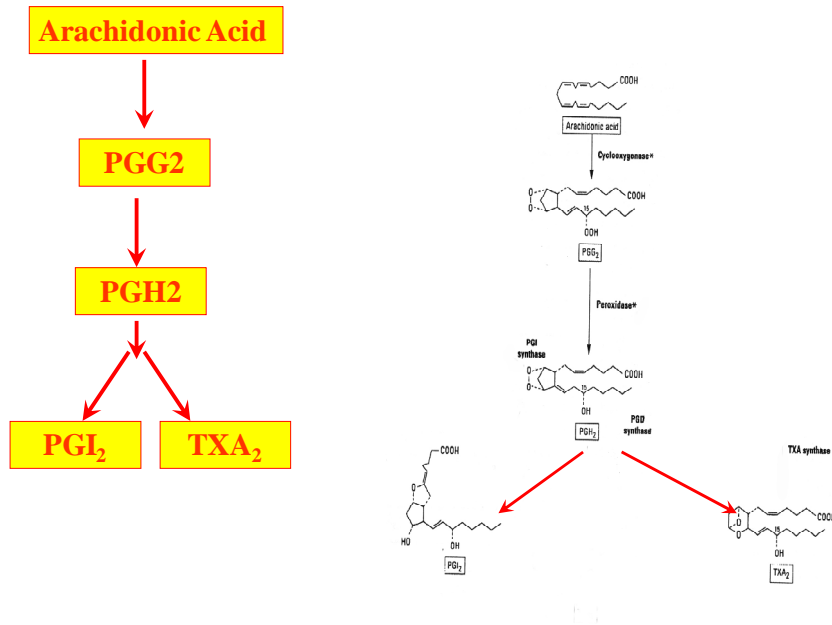
Pregnancy

- ١) Contra indicated
- ٢) Fetal skeletal deformity observe in animals
- ٣) Excrete in milk so contra indicated during lactation

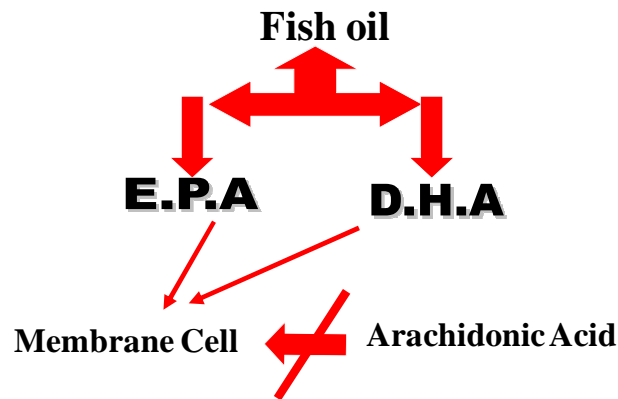
Other adverse effects

- ١) Pneumonia
- ٢) Asthma
- ٣) Fever
- ٤) Tinnitus and deafness
- ٥) Face & generalized edema
- ٦) Photo phobia
- ٧) Epistaxis
- ٨) Hyper / Hypo glycemia
- ٩) Bleeding gums
- ١٠) Somnolence
- ١١) Anxiety & depression
- ١٢) Gout and weight gain

Omega ٣ F.A & Cardio Vascular

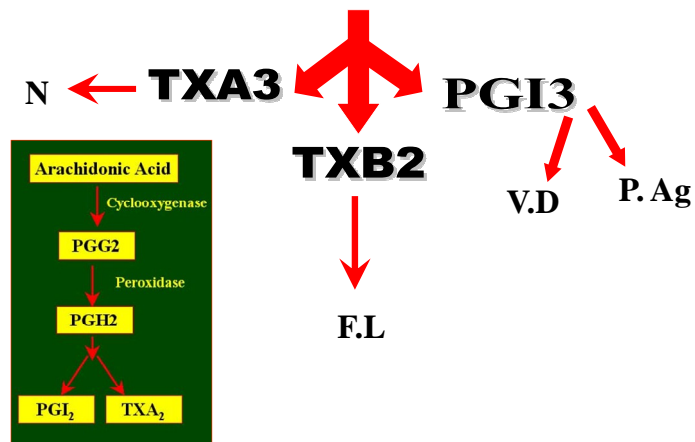


O.3 F.A & C.V (Polyunsaturated Fatty Acids)



Membrane Cell (D.H.A & E.P.A)

Membrane Cell (D.H.A & E.P.A)



Omega 3 Fatty Acid Effect on Lipid & Lipoprotein Levels BP & Arrhythmia

Specific Nutrient	Chol. Total	TG	LDL	HDL	BP Sys	BP Dia	Arrhythmia
Omega 3 (EPA, DHA)	↓	↓↓↓	---	---	↓	↓	↓
Omega 6 (Linolenic Acid)	↓	↓	↓	↓	↓	↓	↓
Oleic Acid	---	---	---	---			
Trans-Fatty Acids	↑↑	---	↑↑	↓			
Palmitic Acid	↑↑↑	---	↑↑↑	↑	Palmitic Acid	↑↑↑	---
Myristic Acid	↑↑↑↑	---	↑↑↑↑	---	Myristic Acid	↑↑↑↑	---
Lauric Acid	↑↑	---	↑↑	---	Lauric Acid	↑↑	---
Medium-chain fatty Acids	↑	↑	↑	---	Medium-chain fatty Acids	↑	↑
Stearic Acid	---	---	---	---	Stearic Acid	---	---