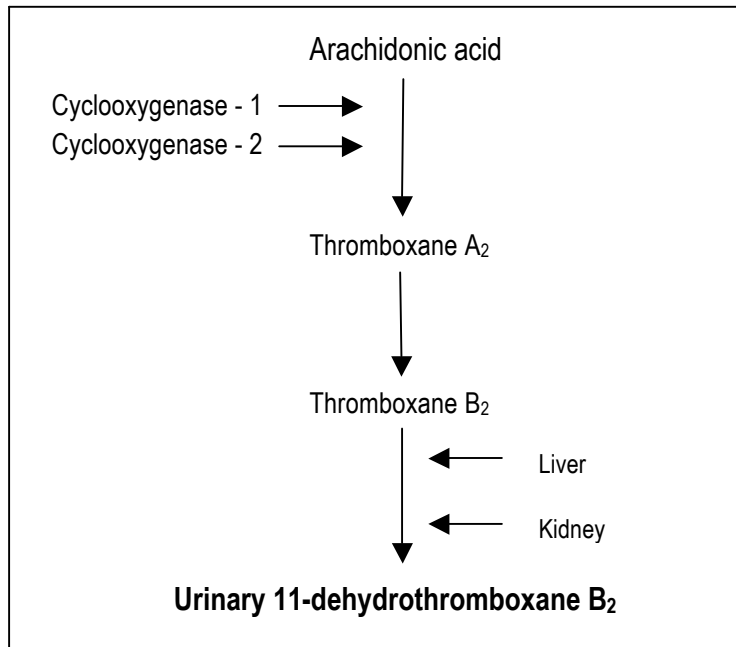


Chronic Inflammation Test

A NEW diagnostic laboratory test

Urinary 11-dehydrothromboxane B₂



Pro-Inflammatory Pathway

- Arachidonic acid is metabolized by cyclooxygenase – 1 & 2 to the prostaglandin, thromboxane A₂.
- Thromboxane A₂ is a powerful platelet agonist and vasoconstrictor.
- Urinary 11-dehydrothromboxane B₂ levels represent systemic thromboxane production and are an indication the pro-inflammatory pathway has been turned on leading to chronic inflammation.

The urinary 11-dehydrothromboxane B₂ test provides valuable information to the healthcare provider

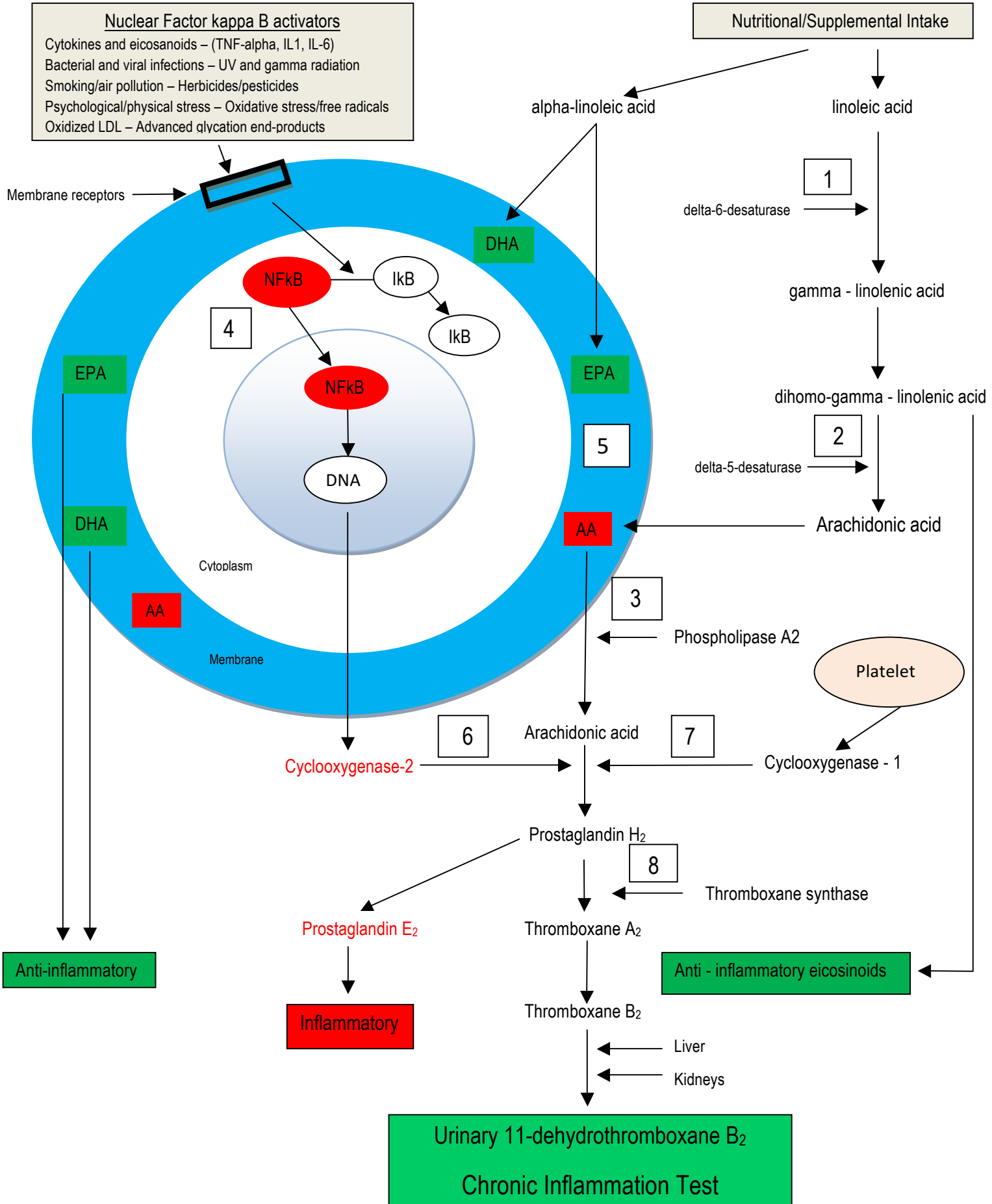
- Measurement of Thromboxane – The Pro-Inflammatory Pathway
- Detection of chronic inflammation
- Monitoring effectiveness of therapeutic measures

Quantitative, Non-Invasive, Inexpensive Urine Test



Innovative Laboratory Tests

Mechanisms of Thromboxane A₂ Generation and Regulation Chronic Inflammation Pathway



Mechanisms of Thromboxane A₂ Generation and Regulation

Major Sites of Physiologic Intervention

Site	Physiologic Action
1	delta-6-desaturase; up-regulation increases AA – down-regulation decreases AA production.
2	delta-5-desaturase; up-regulation increases AA – down-regulation decreases AA production.
3	Phospholipase A2; regulates the liberation of fatty acids from cell membrane phospholipids.
4	Nuclear Factor kappa B; in cell nucleus, activates genes (cyclooxygenase – 2).
5	Cell membrane fatty acids; AA/EPA ratio increased – (inflammatory): AA/EPA ratio decreased – (anti-inflammatory).
6	Cyclooxygenase – 2; catalyzes formation of prostaglandins and thromboxanes.
7	Cyclooxygenase – 1; catalyzes formation of prostaglandins and thromboxanes.
8	Thromboxane synthase; catalyzes metabolic synthesis producing thromboxane A ₂ .

Examples of Chronic Inflammation Interventional Therapy

Therapy	Site	Mechanism of Physiological Action
Aspirin	7 6 4	Inhibits COX – 1 in low dosages (81,162, & 325 mg/day), decreasing thromboxane A ₂ . Inhibits COX – 2 in higher dosages (325 mg/day +). Inhibits activation of NFk B, reducing COX-2 availability.
Corticosteroids, cortisol & synthetic derivatives	3 4	Inhibits Phospholipase A2, reducing AA availability. Inhibits activation of NFkB, reducing COX-2 availability.
Exercise – regular aerobic Exercise – intense	4 4	Inhibits activation of NFkB, reducing COX-2 availability. Increases activation of NFkB, increasing COX-2 availability.
Meditation	6	Decreases expression of COX – 2 gene, reducing COX-2 availability.
Omega-3 /fatty acids	2 3 5 4	down-regulates delta-5 desaturase, decreasing AA production. Inhibits Phospholipase A2 activity, decreasing AA availability. EPA and DHA compete with AA in cell membranes, decreasing AA availability. Inhibits NFkB activity, reducing cyclooxygenase-2 availability.
Phytonutrients Carotenoids, flavonoids, polyphenols (fruits & vegetables,tea, wine, chocolate, olive oil, herbs & spices, nuts & seeds)	4	Inhibits activation of Nuclear Factor kappa B, reducing COX-2 availability.
Smoking cessation	4 8	Reduces activation of NFkB, reducing COX-2 availability. Reduces thromboxane synthase activity, decreasing TXA ₂ levels.
Vitamin E	3	Inhibits Phospholipase A2 activity, decreasing AA availability.

Abbreviations	
AA	Arachidonic Acid
COX	Cyclooxygenase
DHA	Docosahexaenoic acid
EPA	Eicosapentaenoic acid
NFkB	Nuclear factor kappa B

Urinary 11-dehydrothromboxane B₂ Test

Measurement of Systemic Thromboxane A₂ Production

Used to:

- Determine presence of inflammation as reflected by thromboxane A₂ production.
- Quantify the effect of integrative therapeutic measures in reducing thromboxane A₂ production.

About the test:

- 11-dehydrothromboxane B₂ levels are measured by ELISA technique utilizing the AspirinWorks test kit.*
- A urine creatinine measurement is performed as part of the test to normalize the result for urine concentration. Creatinine is measured by a Jaffe colorimetric method.

Specimen Requirements:

- Ten mL urine from a random urine collection. Preferably the first morning void.
 - Specimen stable at ambient temperature for up to 96 hours from collection.
 - If not tested or mailed immediately, samples should be stored at 2-8°C.
 - If samples are to be stored for more than 24 hours, they should be frozen at ≤ -20°C.
- Recommended urine preservatives
 - Chlorstat Tablets
 - C&S Vacutainer tubes
 - UAP Vacutainer tubes
- **NOTE:** 24 hour urines specimens collected in 6M HCL are not acceptable for testing.

Pathophysiology:

Thromboxane A₂ is produced by the enzymatic action of cyclo-oxygenase-1 from activated platelets and/or cyclo-oxygenase-2 via inflammatory pathways. Thromboxane A₂ generation results in vasoconstriction and platelet activation. Urinary 11-dehydrothromboxane B₂ is a stable metabolite of Thromboxane A₂.

**The AspirinWorks test kit has been cleared by the FDA to measure aspirin effect in apparently healthy individuals.*



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