QUERCETIN

Ever more research shows Quercetin to be anti-aging, anti-inflammatory, and anti-oxidant, while it maintains healthy resistance to TH2 Immune Imbalance and in resistance to viral infections in its many biological activities. Quercetin also plays an important role in platelet aggregation, the peroxidation of lipids, obesity, and enhancing the biogenesis of mitochondria --- thus yielding many benefits in controlling INFLAM-AGING.

Quercetin's most critical anti-INFLAM-AGING benefit is as a Senolytic. It prevents the development and spread of Senescent Cells.

The anti-inflammatory activity of Quercetin is mediated via many, many different mechanisms. It reduces levels of inflammatory cytokines released by lymphocytic TH1 cells, lymphocytic TH2 cells, macrophages, and neutrophils. It promotes Apoptosis of activated neutrophils and activated macrophages. Quercetin is particularly anti-inflammatory by blocking NF-kB. It also inhibits inflammatory responses associated with excess Inducible Nitric Oxide.

Quercetin interacts directly with DNA. It is still unclear whether Quercetin repairs DNA, or protects it from oxidative damage.

Quercetin regulates the blood glucose and lipid levels during fasting, decreases the amount of fat deposition in the liver, and plays an important role in the AMPK-dependent Autophagy process.

Obese mice fed Quercetin lost weight and reduced the levels of both triglycerides and cholesterol.

Quercetin is a potent ferroptosis inhibitor --- which is critical to maintaining brain health.

Quercetin helps maintain glycemic control --- probably by inhibiting pancreatic iron deposition and pancreatic β-cell ferroptosis.

Quercetin is senolytic --- it destroys Senescent Cells, thus stopping the SASP cascade that leads to other Senescent Cells. Quercetin was among the first senolytics developed. [Senolytics are vital Rejuvenins in controlling INFLAM-AGING].

The most deleterious Senescent Cells are those resistant to Apoptosis, and which have upregulation of anti-apoptotic pathways to defend against their own inflammatory Senescence-Associated Secretory Phenotype (SASP). The defense against SASP allows them to survive, all the while they are killing neighboring cells.

Quercetin reduces the expression of Senescent Cell markers and cell cycle inhibitors.

Quercetin is particularly senolytic on endothelial tissue.

Quercetin makes Senescent Cells activate Apoptosis.

One of the mechanisms by which Quercetin is anti-aging and anti-inflammatory is by inhibiting mTOR, a primary driver of Endogenous INFLAM-AGING.

Bacterial toxins such as lipopolysaccharide (Endotoxin) from unhealthy intestinal microbiota can exacerbate the SASP, as can TNF-alpha (IMMUNO-SYNBIOTIC).

Quercetin restores the susceptibility of senescent fibroblasts to Apoptosis.

Quercetin may be an effective therapeutic option for age-related inflammation that progresses with the accumulation of senescent fibroblasts (such as Idiopathic Pulmonary Fibrosis).

In human RBCs, Quercetin decreases the level of malondialdehyde (an indicator of oxidative damage), while increasing glutathione and increasing membrane sulfhydryl groups.

Synthesis of glutathione is induced by Quercetin. So is the level of the anti-oxidant Super Oxide Dismutase.

Quercetin inhibits oxidation of LDL cholesterol. It also protects against platelet aggregation.

The safe dosage for Quercetin is 1 g/day, and the absorption is up to 60%. There are no adverse effects from a single oral dose of 4 g.

Quercetin has anti-hypertensive and vasodilation effects.

Quercetin supplementation has a beneficial effect on the microbiota --- and that is one mechanism by which it helps many types of INFLAM-AGING. A microbiota with high populations of Firmicutes and Actinobacteria increases arteriosclerosis. Oral administration of Quercetin reduces the level of atherogenic lipid metabolites produced by the undesirable microbiota --- thereby increasing the concentration of the short chain fatty acids in the intestinal tract that have many anti-inflammatory effects throughout the body.

- One of the major polyphenol constituents of red wine (along with catechin)

- Non-citrus

- 250 mg constitutes a therapeutic dose

Quercetin Immune System Effects:

- Molds (Aspergillus) = Quercetin inhibits fungal infection & mold toxin synthesis

- Histamine inhibitor (Red Dermographics)

- Controls excess release of Leukotrienes and Prostaglandins

- Quercetin inhibits Endotoxin-induced PGE2 production in vitro. (IMMUNO-SYNBIOTIC)

- Improves Intestinal Barrier function (Immuno-Synbiotic)

- Increases efficacy and decreases toxicity of chemotherapy

- Controls excess release of Mast Cells (Red Dermographics)

  - Quercetin inhibits the action of phospholipase A2 and release of Arachidonic Acid in activated mast cells. (Prostaglandin Imbalance)

  - As an inhibitor of mast cell secretion, quercetin causes a decrease in the release of tryptase and the pro-inflammatory Th2 cytokine Interleukin-6, and the downregulation of histidine decarboxylase from mast cells. Quercetin could likely protect brian & nerve health from mast cell degranulation.

  - Quercetin upregulates heme oxygenase activity (see bilirubin below), thus inhibiting mast cell degranulation and reducing allergic reactivity.

  - Quercetin blocks the IL-1 stimulation of IL-6 production (a pathway that is independent of IgE-induced mast cell degranulation).

  - Quercetin inhibits IgE-mediated pro-inflammatory mediator release from mast cells. Release of IL-6, IL-8, and TNF-α is inhibited by 82-93%; tryptase release is inhibited by 79-96%; histamine release is inhibited by 52-77%. --- It is protective from both allergic and inflammatory reactivity.

  - Antigen-induced intestinal longitudinal muscle contractions are significantly mediated via thromboxane A2. The effect of antigen on longitudinal smooth muscle contractions are reduced by the mast cell stabilizing agent quercetin (and by histamine 1 blockers). (But the smooth muscle contracture is more than 3x as sensitive to thromboxane A2 than to histamine.) Quercetin (and H1 receptor blockers) also reduce the intestinal longitudinal muscle contractions induced by muscarinic agonists

- Quercetin is related to disodium cromoglycate in inhibiting anaphylactic histamine release from intestinal mast cells. (It offers similar anti-histamine activity in basophils.) Quercetin is a more effective mast cell inhibitor in mucosal mast cells than in peripheral mast cells

- Quercetin inhibits histamine release and also inhibits the associated elevation of intracellular calcium. It thus decreases TNF-α, IL-1β, IL-6, and IL-8.

- Quercetin inhibits the induction and function of antigen-induced histamine release from cytotoxic T lymphocytes, and from mast cells, and from basophils from subjects with hay fever. The beneficial effects of quercetin are blocked by addition to the system of copper, and to a certain extent manganese and cobalt. (Anti-Anaerobic trace minerals at the cellular level block quercetin's action --- therefore, quercetin is anti-Dysaerobic at the cellular level.)

- Maintains presynaptic acetylcholine retention at neuromuscular junctions of the GI tract

- Protects DNA from oxidation; quercetin = 78%, vitamin C = 12%, but additive with quercetin

- Inhibits protein kinase C (carcinogenic process); inhibits tyrosine kinase (tumor spread)

- Xanthine oxidase and xanthine dehydrogenase (uric acid production in the liver) inhibition (--- probably anti-Dysaerobic)

- Flavonoids reduce lipid peroxidation; flavonoids are protective against auto-oxidation of rat cerebral membranes, with quercetin being more effective than rutin, which is more effective than hesperidin.

- Quercetin helps maintain healthy arteries by reducing the susceptibility of LDL to aggregation. It has no direct antioxidant effects on LDL, but reduces its tendency to oxidize by binding LDL particles into aggregates.

- Quercetin inhibits Endotoxin-induced (--- IMMUNO-SYNBIOTIC) Nitric Oxide production in macrophages through suppression of Nitric Oxide Synthase expression.

- Quercetin inhibits platelet aggregation by binding to thromboxane A2 receptors. (Electrolyte Stress & Prostaglandin)

- Quercetin and rutin decrease both the immediate and late-phase increase in airway resistance in asthma. These flavonoids also significantly inhibit histamine (15 mg/kg) production as well as recruitment of neutrophils and

eosinophils during the late-phase response. Quercetin and rutin are about half as effective as dexamethasone (3 mg/kg).

- Photosensitized hemolysis of human RBCs is suppressed by quercetin and rutin, accompanied by inhibition of lipid peroxidation. --- Indicating that flavonols can function as antioxidants in biological systems by terminating radical chain reactions and removing singlet molecular oxygen. This antioxidant function is a mechanism by which quercetin and rutin decrease excess permeability and fragility of capillaries. (Leg Dermographics & Edema)

- The capillary fragility group of flavonoids (including particularly hesperidin, quercetin, and rutin) improves capillary integrity, thus conferring healthy resistance to cerebral hemorrhage, gastrointestinal hemorrhage, retinal hemorrhage, diabetic hemorrhage, telangiectasia, bleeding gums, lung hemorrhages, varicose and spider veins, bruising, hemorrhoids, and aneurysm.

- The pathology Scurvy actually consists of 27 types of collagen (elastin) breakdown. These symptoms of scurvy are not benefitted by ascorbic acid, but only by the capillary fragility group of flavonoids. ----- Leaky Gut Syndrome is actually in many cases "scurvy of the intestine".

- Cardioprotective actions of two bioflavanoids, quercetin and rutin, in experimental myocardial infarction in both normal and type 1 diabetic rats. J Pharm Pharmacol, 2009. ----- "Revascularization therapy is the mainstay of treatment in the management of myocardial infarction in normal and diabetic patients. We attempted to evaluate the cardioprotective actions of quercetin and rutin in ischemia-reperfusion hyper-induced myocardial infarction in both normal and diabetic rats. Quercetin and rutin significantly limit the infarct size in both normal and diabetic animals in similar fashion. However, rutin offers complete cardio protection at a dose of 10 mg/kg in terms of limiting infarct size. Both flavonoids partially but significantly attenuate the lipid peroxidation. In addition, treatment shows moderate improvement in heart rate in both normal and diabetic rats."

- Two week quercetin supplementation (1,000 mg daily) of trained cyclists after a 3 day period of heavy exertion resulted in increased granulocyte oxidative burst activity, and a significant decrease of C-reactive protein and Interleukin-6 and Interleukin-10.

- Supplementation with quercetin decreases upper respiratory tract infections in trained cyclists during a 2 week period after intensified exercise.

- Quercetin increases exercise tolerance in mice.

- Oral administration of quercetin leads to accumulation in brain tissue and attenuates the increased oxidative stress in the hippocampus and striatum of rats exposed to chronic forced swimming.

- Quercetin reverses acute stress-induced behavioral changes.

THE QUERCETIN ENIGMA.

Enigma? ----- Simply ….

Quercetin, a common polyphenol in healthy diets, has been linked to important health benefits from eating Quercetin-rich foods in epidemiological studies, and shows potent biological actions from in vitro and animal testing. However, because of a number of factors, translating these findings into clinical reality has not routinely occurred because human supplementation studies using Quercetin have not consistently found the promised health benefits, --- resulting in the Quercetin Enigma. Thus, utility of Quercetin for human use has confused researchers and clinicians for decades.

There may not be a nutrient that has historically suffered from more confusion, hyperbole, frustration, and conflicting “scientific” research than has quercetin. There are studies showing amazing clinical benefits from quercetin --- benefits that cover all aspects of ImmunoNeuroEndocrine Stress. Yet there are also studies showing that quercetin is not even absorbed when taken orally. There are even studies implicating quercetin as a cause of cancer.

Recognizing the incredible potential of Quercetin as a supplement, NUTRI-SPEC has followed the evolving Quercetin research for several decades. All through that time, we always strove to find the most biologically active form of Quercetin to put in your supplements. Guided by the most recent research --- we have changed the form of Quercetin we offer you countless times over the years. ----- But at last, the dark cloud hanging over Quercetin has been lifted.

The truth about quercetin is quite evident when you look at the flaws in the studies --- flaws that relate to using inappropriate forms of quercetin for supplementation, and inaccurate and inappropriate mechanisms by which its efficacy is measured.

There is one form of Quercetin that stands alone as being the most biologically active --- meaning the most efficiently absorbed, assimilated, and utilized. And there is an abundance of research showing that this form of Quercetin, and only this form of Quercetin, confers all the amazing benefits that health food sheeple, heath food pill peddlers, and NUTRI-SPEC alike have always known should be there.

That form of Quercetin comes from only one source in the entire world --- and now you and your patients have it in your Activator, Formula ES, Formula EI, Complex P, and Oxy D. Nutri-Spec imports your Quercetin from that one source --- from Brazil.

The Quercetin Enigma has been solved by QU995 --- pure anhydrous Quercetin aglycone, extracted from plant sources in a proprietary process that demonstrates superior bioavailability and cost-effectiveness in humans, as well as more clinically significant outcomes --- far superior to other forms of Quercetin.

Research CLUES & research FINDINGS leading to the development of QU995:
(From the one company that solved the Enigma)
a) The most concentrated sources in nature from the Japanese Pagoda Tree and the Chinese Scholar Tree.

b) Quercetin glycosides are not found in human plasma.

c) In plant foods, quercetin is mostly glycosylated (one or more sugars are attached to one or more hydroxy groups per quercetin molecule).

d) Nonsignificant findings from human clinical studies of other forms of Quercetin do not apply to QU995 due to absorption and dosage differences;

e) Necessary emphasis on Green crop management – follows Global Good Agricultural Practices; --- Patented and proprietary growing, harvesting, management practices; · Patented & proprietary extraction, processing and handling processes without solvents;

f) The vast literature on Quercetin and other plant phytochemicals shows that quercetin has a high level of biological activity, even when "inactivated" as glucuronides or methylated versions. Since all Quercetin forms become the same forms in plasma and tissues, the delivery of Quercetin relies on both dosage and form administered.

In summary, QU995 has these advantages over other forms of Quercetin:

· Highest potency by weight of any Quercetin (99.5+%);

· Highest purity (verified during safety testing for USFDA GRAS submission for solvents, pesticides, herbicides, heavy metals and microbial counts);

· Different particle characteristics = Total Uniform Microdispersion instead of crystals (more surface area for better solubility and absorption);

· Documented absorption in humans (plasma total Quercetin);

· Absorption superior to other Quercetin aglycone forms;

· More cost-effective per absorption than other commercially-available Quercetin aglycones and glycosides;

· QU995 has more human clinical studies than other Quercetin materials;

· QU995 has more human clinical studies with significant health benefits;