

GRADUAL AGING RISE IN INFLAMMATION & ANTI-INFLAMMATORY HOT COCOA or COOL YOGURT SHAKE DRINKS

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A. Inflammation & Consequences

Every generation of humans has wondered why the second half of life is so fraught with rather **rapidly increasing diseases** that come on gradually and then **seem to all swarm at us from every directions**. **Most humans don't die of general old age, we die of diseases associated with age**. This is very different than the pre 1930 period which mainly died of infections. This rapid rise of a very wide variety of diseases, curtails our delight in living also leads to an acceleration of the rate at which we die. **This has been a problem to understand why some many different diseases rise so rapidly toward the second half of our life**. If we could understand the underlying causes, we might be able to slow or even massively postpone this process. To accomplish this **we need to have a good verifiable cause that can explain all these different disease types that mostly end our lives AND why they accelerate rapidly**. This list of age associated diseases that prematurely claim our lives are mostly **cardiovascular disease, cancer, type 2 diabetes, autoimmune diseases, and various dementia** (especially including Alzheimer's disease).

Each age associated disease has slightly or greatly different initial causes (oxidized LDL in cardiovascular diseases, **epigenetic** elevation of growth factors and repression of tumor suppressor genes along with DNA damage in cancer (**epigenetic** changes mean changes in what proteins are made, but not altered DNA sequence coding for them), elevated blood glucose in type 2 diabetes, inappropriate immune response and failure to modulate in autoimmune diseases, and creation of inflammation damage caused by plaque proteins that go on to kill neurons in Alzheimer's). **Despite these differences, all these diseases are**

promoted and worsened by a process of age related gradually increasing chronic whole body inflammation ([Ref 1](#), [Ref 2](#)).

The principal player in this chronic whole body inflammation is a gene called **NFkB** (**N**uclear **F**actor **k**appa **B**). **NFkB** is a very critical innate (primitive) immune system gene that is the principal **start point of most inflammation**. This **NFkB** gene is activated by **a very wide range of insults and improper physiological conditions leading to synthesis of a variety of inflammatory cytokines and 'cell survival related products'**. These survival products include **elevated endogenous antioxidants** (mitochondrial SOD Mn super-oxide dismutase), **anti-apoptosis molecules** (anti-cell suicide), **cell adhesion molecules**, **cytokines (often inflammatory immunological messengers)**, and **growth factors**. **NFkB** activation is an emergency response to encourage survival of cells and begin containing the invading pathogen or accidental tissue damage. The production of activated **NFkB** products like **inflammatory cytokines** decreases back to a low normal level with recovery and healing from the insult.

Cytokines produced by the NFkB are immune messengers that can be highly inflammatory. Inflammation is a process that also leads to high levels of dangerous free radicals as well as other immunological actions to attack foreign invaders or eat up damaged cell components. Cytokines are immune system messengers that makes one feel miserable when one gets sick. They take precedence over normal physiology because the body acts via **NFkB** produced products (including inflammatory cytokines) as if it was under a microbial invasion or had accidental tissue damage. This is a survival matter. Cytokine production is needed in an orchestrated way to help you contain and destroy the pathogen and then recover to normal. A similar process governs tissue repairs from accidents. This involves activating various cells and processes of the immune system. First the INNATE and then the ADAPTIVE responses proceed (see [Immunity](#) section). **Other conditions than pathogen invasion or tissue damage can also elevated the activity of NFkB**, as it is a normal survival related reaction to a variety of threats and ordinary normal stresses like exercise. Unfortunately, this survival aspect is also used by cancer cells that must make high levels of activated **NFkB** with subsequent inflammatory cytokines - *permitting survival and growth of the cancer cell*. **The more malignant (invasive) the cancer cell, the higher the need for this activated NFkB production of inflammatory cytokines.** All the age-associated diseases appear to be accelerated by chronic NFkB activation.

We cannot totally block NFkB activation as many epithelial cells use this molecule at very low levels for required immune system 'I'm OK' signaling purposes (without any foreign pathogen stimulation). Animals genetically altered to have no capability to activate

NFkB expression die soon after birth of massive skin and organ inflammation because this minimal signaling is absent. Immune cells that don't get this minimal signal 'activate' and secrete more cytokines that lead to total skin and organ inflammation and death.

Generally, activation of **NFkB** is a beneficial process that handles infections, accidents, or normal functions like exercise and then is restored to an inactive status. There is a whole "down regulatory process" that returns our body to a beneficial disease free condition with minimal activated **NFkB** inflammation. This down regulatory process requires the omega-3 unsaturated fatty acids.

However, this normally beneficial process is not always the case. The last half of mammalian life seems to encounter the problem of gradually rising 'chronic' and harmful activation of this **NFkB** expression 'survival' mechanism. In this case it becomes a promotional force accelerating all of our late life age associated diseases (listed above).

All toxic and physiological injuries also lead to elevations of inflammatory conditions by activated **NFkB**. This includes toxic heavy metal poisoning, organic compound poisoning, radiation, and elevated glucose blood levels. In normal circumstances after correction of these problems, this elevation is returned to a much lower normal level that corresponds to 'minor information signaling' between the immune system and different tissues at lower levels of these inflammatory cytokines.

Unfortunately, with age these occasional elevations *become a slowly increasing chronic (ongoing, not reversed) level of activation of **NFkB** and the downstream inflammatory cytokines*. This is supremely unhealthy for our longevity. Much of this negative effect acts to promote the progression and accelerate the severity of all the late life 'age associated diseases'. Another consequence of this chronic inflammation appears to be the diminished repair and maintenance with age. Diseases that are accelerated include cardiovascular disease, cancer, type 2 diabetes, autoimmune diseases, and various dementia (especially including Alzheimer's). A rise in whole body (systemic) chronic inflammation aggravates and promotes all these various diseases by accentuating the immune system inflammatory aspects of each of these age related diseases.

We now have a *good, but incomplete understanding of the underlying causes of this gradual rise in chronic inflammatory status* that is taking place with age. Our current understanding of why this gradual rise in chronic inflammation with age is **caused by these factors**:

1. diet derived cooking induced cross-linked reactions of reducing sugars with lipids and proteins (see AGE's & ALE's in Topic List) that trigger a blood vessel receptor (RAGE receptor) to signal white blood cells to form and release inflammatory cytokines in a whole body manner that then in turn generates secondary production of inflammatory cytokines from otherwise distant unaffected cells [Ann N Y Acad Sci](#)

2. elevation of intra-abdominal fat cell stuffing (increased belly fat signaled by increased belly cavity volume) that triggers both fat cell and macrophage release of systematic inflammatory cytokines that further trigger 'secondary production of inflammatory cytokines' from otherwise distant unaffected cells in the whole body, [Front Biosci](#) . *Especially important here is the inflammation caused in the (brain organ) hypothalamus that down regulates pancreatic Beta-cell production of insulin leading to progressive increased insulin production problems* [Int J Obesity](#).

3. toxic substances or conditions that trigger an epigenetic change leading to a profound lowering of the "insult sensitivity" needed and prolonging the period of activation of *NFkB* production of these inflammatory cytokines. Epigenetic changes are changes in the amounts of particular genes expressed, not damage to the DNA sequences themselves. These substances or conditions include exposure to toxic heavy metals, excessive sugar intake with elevated body glucose maintenance levels, radiation, and toxic organic chemicals that all act to increase *NFkB* creation of inflammatory cytokines. *These epigenetic changes are reversible, but require specific lowering actions to the triggers and a "resetting" of the epigenetic sensitivity of *NFkB* to activation.* A "beneficial" epigenetic change to "re-normalization" results in decreased production of inflammatory cytokines. **Most but not all epigenetic changes are negative.** Long lived calorie restricted animals have a *beneficial epigenetic change that sustains their Longer Healthy Life*. The opposite occurs with most environmental epigenetic poisons like organic chemicals, heavy metal toxicity, elevated blood sugar concentrations, or radiation above very low hormetic levels, etc.. [Neurobiol Dis](#) Our bodies can tolerate and respond relatively well to a **very** small levels of these epigenetic poisons (hormesis), *but beyond that level that they are profoundly damaging epigenetic poisons*. Most of our pharmaceutical drugs, herbicides, and pesticides are epigenetic poisons that are harming our long term health. This is an area big pharmacological companies just don't want known.

4. loss of good insulin sensitivity that leads to profoundly higher inflammatory activation seen most clearly in **type 2 diabetics**, but also present in most older, but still normal people who have a considerably reduced insulin sensitivity and glucose tolerance. *The profound tragedy of type 2 diabetes lies in being almost completely reversible, but few individuals will undergo the needed calorie restriction (CR) and limiting sugar*

intakes that can alleviate this 'needless' constantly worsening disease. See the Subscriber PDF about [Type 2 Diabetes](#) in the orientation page of [LHL.net](#). [Nutr Metab Cardiovasc Dis](#)

5. Stress when coupled with a high fat, high sugar diet lead to increased visceral (gut cavity or belly fat) obesity generating chronic inflammation [Anal NY Acad Sci](#)

Missing sleep also leads to higher inflammatory exposure [Best Pract Res Clin Endocrinol Metab](#) as does too low a level of Vitamin D3 [Endocrine](#) .

6. perhaps there are many others that we have not yet ascertained. One of these will undoubtedly turn out to be *high levels of microbial infection of gums and mouth areas that allow intake of bacterial excreted, profoundly inflammation inducing, lipopolysaccharides.* These 'bad' molecules enter in to the (systemic) blood stream to cause inflammation by just chewing action when you have *gigivitis*. [J Periodontol](#).

7. a bad ratio of beneficial to un-beneficial bacteria in our colon. This is the usual result of not getting enough oligo-fructose residues (prebiotics) in our diet to feed the 'good' bacteria in the colon and improve the 'good' to harmful ratio. This is covered in the Diet 2 section of [LHL.net](#). [Mutat Res](#)

We are not yet in possession of enough data to be certain of the importance ranking of these sources of increased gradually rising inflammation with age, but all are likely to be important. Different people will experience a differing levels of these contributing factors. I believe for most this order corresponds to a non-type2 diabetic phenotype but otherwise relatively healthy older human, but for diabetics the 4th rises above all the others. **All of these are also avoidable and REVERSIBLE.** This **REVERSIBILITY** is the reason we can recover health despite having progressed along these bad paths for some time.

PLEASE UNDERSTAND THAT THIS PROCESS TO SUPPRESS INFLAMMATION WITH A 'COCOA DRINK' IS NOT SOLVING ALL THE UNDERLYING PROBLEMS OF FOOD RELATED AGE & ALE, OBESITY, LOSS OF INSULIN SENSITIVITY, NOR EPIGENETIC CHANGE, etc.. IT IS MERELY BUYING TIME WITH A LOWER INFLAMMATORY ACCELERATION SO YOU CAN DEAL WITH THESE MORE PROFOUND PROBLEMS THAT CAN ALSO BE MINIMIZED. I THINK OF THIS AS A SHORT TERM MEANS OF SLOWING DOWN THE DAMAGE THAT THESE MORE IMPORTANT CAUSES ARE DOING TO MY HEALTH AND LONGEVITY. THAT SAID, IT IS WELL WORTH DOING - AND EASY TO DO.

While I can't deal with individually reversing all of these specific pro-inflammatory actions (1-7) one by one in this single article (the **SUBSCRIBER INFLAMMATORY PDF** will !), I can use the **Super Anti-Inflammatory Cocoa or Yogurt Drink** as a means to lower the overall inflammatory situation *that will blunt or alleviate the consequent promotion and acceleration*

*of the age associated diseases described above - and presumably allow a **Longer Healthy Life**.* This would be even *an even **Longer Healthy Life** if one were to deal with the specific underlying causes of this gradual rising inflammatory status.* Sometimes decreasing a particular event in a single step of a complicated chain can greatly improve a very wide range of negative consequences. This is why lowering **NFkB** driven inflammation is one of the **Unique Cancer Vulnerabilities** in the **Cancer-Alternatives.pdf** for **SUBSCRIBERS**. *I suspect that the benefits of lowering the underlying causes will be of much greater benefit for a **much Longer Healthy Life**.*

REFERENCES TO DOCUMENT NFkB INHIBITION BY:

Anti Inflammatory AGENT

Dried Ginger Powder NFkB inhibition [Exp Gerontol](#)

Curcumin " " [Mol Cell Biochem](#) [Cancer Lett](#) [Phytomedicine](#)
[Anticancer Agents Med Chem](#) [Cancer](#)

Clove oil " " [Mol Carcinog](#) [J Appl Physiol](#)

Cocoa [Int J Oncol](#) [J Am Diet Assoc.](#) [Health Day](#) [J Agric Food Chem](#)
[J Agric Food Chem](#) [Arch Intern Med](#)

[Int J Med Sci](#) (suggests cocoa intake decreases heart disease, dementias, type 2 diabetes, and cancer in native peoples)

[Int J Obesity](#) (quercetin, a time released component of cocoa attenuates adipocyte & macrophage inflammation)

Warnings: *I would not do excessive cocoa intake (more than 3 Large mugs per day), as we do not yet have longitudinal (life long studies). Native peoples that heavily use the cocoa plant show very promising evidence in the alleviation of multiple age associated diseases [Int J Med Sci](#). Moreover, amounts of Cocoa intake correlates in elderly people with improved 15 year survival probability (thus, all causes mortality) [Arch Intern Med](#).*

Warnings: Clove oil should not be spread on skin as there exists a remote possibility that one could have an allergic reaction (always see if one's body likes the smell and before using !)

Warnings: *The same allergic reaction is possible for all of Ginger, Curcumin, Clove oil, and cocoa, but occurs at extremely low levels. Always smell and taste test a small amount to be sure one do not respond negatively. Allergic reactions usually cause 'out of the blue' sudden stuffed up nose and general discomfort. I would use my judgement here.*

Warnings: **Do not take more than 20 drops total of clove oil per day! This is without danger as long as you are not allergic to it. I have taken 20 drops/day for over 5 years and marvel at improved eyesight, clear skin and remarkable body resilience. I function at high levels with 6 solid hours of sound sleep.**

Below is the Recipe for the Super-Anti-Inflammatory Cocoa Drink

B. Anti-Inflammation Hot Cocoa Drink

COMPONENT	REASON	SOURCE
Dried Ginger Powder 1 Tablespoon	Inhibits <i>NFκB</i>	iHerb
Curcumin 300 mg	Inhibits <i>NFκB</i>	Now Products
Clove oil 5 drops	Inhibits <i>NFκB</i>	NOW Products
α-D-Limonene (orange oil flavor) (1- 5 drops Now Orange oil)	Mainly Flavor (optional)	Orange oil NOW
Cocoa (1-2 Tablespoon) (best easily available is Green & Black's but no longer available, but Hersheys will do fine) (Cocoa is optional here, but worth the effort because of its long duration effects)	Taste + slow released <i>quercetin</i>	Cocoa
Stevia or Xylitol to taste (SweetLeafStevia is not mixed with glucose as most others are !)	safe sweeteners	SweetLeafStevia 100% Xylitol (<i>any brand</i>)
Cream for rich taste (2-4 Tablespoons) (not Half and Half (contains lactose reducing sugar that cross reacts to give AGEs) (like butter @3-4% butyrate, rich in CLA precursor,	Source of butyrate	Your Choice
Instant (1-2 teaspoons) or Brewed Coffee	Optional for taste	Your Choice

Sugar is not used in this Anti-Inflammation Hot Cocoa Drink as it is an augments of inflammatory action. See the [Diet 1](#) section for a listing of available sweeteners and reasons for choosing only Stevia or Xylitol.

DO NOT ADD omega-3 FATTY ACIDS (FISH OIL OR OTHER UNSATURATED OILS) TO THIS HOT COCOA - POLYUNSATURATED OILS SHOULD NEVER BE HEATED - NOT EVER - will rapidly oxidize and become harmful to one's health.

How To Make this

"Anti-Inflammation Hot Cocoa Drink"

I put all the ingredients (except xylitol/stevia) together in a **big heat retaining mug**. The best is a big 16 oz capacity **double wall stainless steel mug with a heat retaining top that retains heat for 2-3 hr**. On to the evenly stirred mix of ingredients, pour in **15 ounces** of 160-180°F water (**DO NOT ADD BOILING WATER !**). **Do this rapidly to mix the Clove oil together with the rest. I am always sure to add the cream which is required.** Cream is needed to solubilize the curcumin and the clove oil (that will not go into solution unless use the cream) !. **Then the Clove oil and curcumin will mix in without effort.** After one finds

how much xylitol or stevia one wants to sweeten the bitter Cocoa, then can use that much in original step (add with rest of components before the hot water).

I drink this over a 2-3 hour time period so that it is spread out somewhat - I don't just throw it all down at once. I want to have a more prolonged delivery because most of the components have a relatively short half life in blood, but hold up well in the hot drink.

N.B. The Ginger Powder will fall to bottom, but most of the Zingerone ginger component will be extracted in the solution. I don't drinking the ginger powder dregs at the bottom, as this is somewhat irritating to the throat.

If the Super Anti-Inflammation Hot Cocoa Drink cools off too much, then just add enough boiling water to warm it up again. Dilution will not be harmful. If any separation occurs, just stir the mixture to mix.

If one cannot stand cocoa, try using coffee or some plain unsweetened yogurt **while retaining the cream so one keeps the curcumin and clove oil in solution. I WOULD NEVER IGNORE THIS AS UNDILUTED CLOVE OIL IS VERY BURNING TO THE MUCUS MEMBRANES OF YOU MOUTH AND ESOPHAGUS. ONCE DILUTED THIS IS FINE.** Greek style yogurts are much richer in protein as they take out some of the surplus water.

IMPORTANT WARNING: Don't use a microwave to cook any food or even to heat up this mixture (obviously not with a metal container !). **But there is a much more profound reason.** Microwaves create a "molecule local" higher than boiling temperatures due to the way they reverse polarities of polar compounds. This polarity reversal causes a high friction factor that creates the heat from microwaving. Most important biological compounds are partly polar. This higher than boiling environment is not taking place by heating a pot of water with a heat source. **Microwaves actually generate damaged and degraded nutrition and damage complex compounds in foods being microwaved due to this higher local temperature.** This is because the rapid switches in polarity lead to enormous friction local to the particular polar biological molecule. This means the effective temperature and thus damage to biological molecules is much greater in microwave heating than ordinary boiling or steaming. This extends well beyond vitamins to flavonoids and curcumin as well as larger molecules. More information on this can be found in the Cooking Subsection of [Diet 1](#) at LongerHealthyLife.net. **Microwave cooking is a time saver but a nutritional disaster almost as bad as irradiated foods.** Please understand that microwaves used to cook and Terahertz radiation (and ionizing x-rays) used by the TSA for airport scans **are not normally present on the earth.** [Microwave](#) radiation is mostly absent by absorption of our atmosphere, which also strongly absorbs [Terahertz](#) radiation. **Biology has not had to develop protection defenses against them because they were absent in our evolution. They were especially absent at**

the high levels they are currently present. AVOID MICROWAVE (and terahertz) exposure ! More of this information will be covered at [Longer Healthy Life.net](http://LongerHealthyLife.net). In addition to our **“too smart by half”** pharmaceutical companies and medical CAT scan irradiation. **Some (much) of our technology is injurious to our health and the maintenance of a healthy ecology on this planet.** One only need think of genetically modified organisms (GMO so called ‘Foods’), high fructose corn syrup in soda pop that makes our young children fat, GSM, substitution of Bromates instead of iodates in our wheat flour that inhibits our thyroxin production, high exposure to fluorine in our water and foods, a medical industry pushing endless drugs that largely treat symptoms rather than restore health, ‘animal farming’ over use of anti-biotics that encourages pathogenic multi-drug resistant bacteria, soil exposure and runoff of pesticides and herbicides that are poisoning our oceans, gender bending plastic cross-linkers, and so many more. There is almost a complete indifference to these multiple assaults that are almost never really tested for long term biological consequences. This can only be pushed so far before it collapses our biological support systems. Americans, due to their fascination with any new technology, are using almost all untested technologies with long term biological harmful effects. **The USA is at the forefront of injuring the biological stability of our planet** for the profit of the few ! This is mostly about just money related naked power and control issues. (think depleted uranium and the huge rise in birth defects in Fallujah, Iraq thanks to the US military) [Depleted Uranium Fallujah](#) . More at LHL.net.

C. Anti-Inflammatory Cool Yogurt Shake

COMPONENT

REASON

Coconut Oil (virgin) 2 Tablespoons	Solubilizes Curcumin	SOURCE
Yogurt (plain, no sugar or fruit) 1 cup	Makes Shake	SOURCE Any plain Yogurt
Dried Ginger Powder 1 Tablespoon	Inhibits <i>NFKB</i>	SOURCE iHerb
Curcumin 300 mg	Inhibits <i>NFKB</i>	SOURCE Now Products
Clove oil 5 drops	Inhibits <i>NFKB</i>	SOURCE NOW Products
α-D-Limonene (orange oil flavor) (1- 5 drops Now Orange oil)	Mainly Flavor (optional)	SOURCE Orange oil NOW
Cocoa (1-2 Tablespoon) (best is Green & Black's but not easily obtained, but Hersheys will do fine)	Taste + slow released <i>quercetin</i>	SOURCE Cocoa
Cocoa is DESIRABLE BUT OPTIONAL in this Cool Yogurt Shake		
Stevia or Xylitol to taste (SweetLeafStevia is not mixed with glucose as most others are !)	safe sweeteners	SOURCE SweetLeafStevia 100% Xylitol (any brand)
Cream for rich taste (2 Tablespoons) (not Half and Half (contains lactose reducing sugar that cross reacts to give AGEs) (like butter @3-4% butyrate, rich in CLA precursor,	Source of butyrate	SOURCE Your Choice
Instant (1-2 teaspoons) or Brewed Coffee	Optional for taste	SOURCE Your Choice

Sugar is not used in this Anti-Inflammation Hot Cocoa Drink as it is an augmenter of inflammatory action. See the [Diet 1](#) section for a listing of available sweeteners and reasons for choosing only Stevia or Xylitol.

How To Make this

"Anti-Inflammation Cool Yogurt Shake"

We must dissolve the curcumin, Clove oil, and α-D-Limonene (orange oil flavor) in a lipid media. To do this we put the two tablespoons of virgin Coconut oil and the 1 to 2 Tablespoons of cream in a plastic glass (12-15 ounce capacity) and gently warm this in warm water (not hot, not boiling). The coconut oil that is a solid at low room temperature will melt and mix with the cream. Then you add the curcumin and cocoa (optional) and swirl this warm mixture until the curcumin is dissolved and the mixture has a tan cafe latte color. This dissolving of the curcumin is the time consuming step which will take a couple of minutes of swirling the mixture to accomplish.

After the mixture is dissolved, one adds the Clove oil, and α -D-Limonene (orange oil flavor), then rapidly mix in the yogurt, stevia, ginger powder, and instant coffee (if desired) and slowly add water while mixing to arrive at the consistency you wish. This can be from a semi-solid gel (eat as would a frozen yogurt) to a more flowing kefir or 'milk shake' consistency.

You should end up with a yogurt drink that resembles a somewhat more tasty Cafe Mocha .

Consume this over a period of at least an hour or two to gain a slow steady delivery of anti-inflammatory over a 4-6 hour period. You may repeat this three times a day to cover the entire waking day. Inflammation is highest during periods of food intake (particularly carbohydrates) and strong exercise. *During sleep, inflammation is greatly diminished.*

If you like this drink, you can gently warm a big lot of coconut oil in warm water and add the required number of capsules of curcumin to get to 300 mg per 2 table spoons of coconut oil, be sure you get it into solution and then let it cool with occasional stirring to avoid any potential settling of the curcumin. When it cools and solidifies, all you have to do is take out 2 tablespoons of this mix for each anti-inflammatory Yogurt shake you make. This will greatly reduce the time taken. Store the the solid Coconut oil-curcumin in the dark in a refrigerator - lasts for a very long time (months). Avoid getting water into any coconut oil mix as this may allow growth of microbes.
