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Our Bioreaction blog tells the stories of our journey from the simplest to the most complex discoveries made by the Community BioRefinery that will change the way the world looks at 'carbon neutral world' – and how the Community BioRefinery seeks to 'feed and fuel the world'. Our Bioreactions involve a process that leads to chemical transformations from food to fuel and everything in between.

A "bioreaction" (in biochemistry terms) includes five types of general chemical reactions. They include: Combination synthesis; Decomposition; Single displacement; Double displacement; and Combustion. (Don't worry; there won't be a quiz...)

What are High Oleic and Hemp Oil?

You know those days when you get into your car, turn the key and the "Check your Oil Light pops up?" How often have you heard **changing your engine oil** will help keep your engine in good shape? Allowing it to run more efficiently? We are now in the digital age, and see our bodies as a hybrid machine we need to take care of. We need to check the oil we put into our foods – like high oleic corn oil (phytosterol-plant sterols) and hemp seed oil (*not* CBD oil).

What is High Oleic Oil?

The 2018 Farm Bill defines FDA-regulated products. The Agriculture Renovation Act of 2018, Pub. L. 115-334, (the 2018 Farm Bill) was signed into law on Dec. 20, 2018. The new regulation adjusts specific federal authorities connecting to the manufacturing as well as the marketing of hemp, defined as *"the plant Marijuana Sativa L. as well as any type of part of that plant, consisting of the seeds thereof and all derivatives, removes, cannabinoids, isomers, acids, salts, as well as salts of isomers, whether expanding or not, with a delta-9 tetrahydrocannabinol focus of not greater than 0.3 percent on a dry weight basis."* These modifications consist of removing hemp from the Controlled Substances Act (CSA), which implies that marijuana plants and by-products containing no greater than 0.3 percent THC on a completely dry weight basis are no longer controlled compounds under federal law.

We know not everyone is in love with Plant *sterols* - a group of plant substances that resemble cholesterol. The Plant *sterols* that help reduce cholesterol. The Plant *sterols* that *limit* the amount of cholesterol that enters your body. Hemp Oil contains sterols, the steroid alcohol that experts claim is useful in lowering cholesterol, and an ideal daily dietary intake. Hemp seed oil with beneficial sterols is linked to lowering your risk of a heart attack. The aliphatic alcohols contained in hempseed oil have also been known to lower cholesterol and reduce platelet aggregation.

Hemp seed oil is considered among the world's healthiest oils. Hemp oil is naturally rich in omega-3, Stearidonic Acid (including omega-3 SDA, a more potent kind of fat). Stearidonic Acid omega-3 SDA boosts omega-3 fat intake, food manufacturers are strengthening eggs also milk with these acids. One omega-3 receiving focused concentration on is stearidonic acid (SDA.)

Hemp seed oil has one of the lowest quantities of hydrogenated fat and the highest components of polyunsaturated fat among all the culinary oils. The Community BioRefinery has a passion for plant sterols, the scientifically proven health and wellness advantages they carry food products. Hemp oil is considered one of the globe's healthiest oils. Hemp oil is normally rich in omega-3 (consisting of omega-3 SDA, an extra potent form of the fat). Hemp oil has one of the most affordable quantities of saturated fat as well as the highest materials of polyunsaturated fat among all the culinary oils.

Hemp seed oil is considered one of the world's healthiest oils. This oil is rich in omega-3 (consisting of omega-3 SDA, a potent form of fatty acids). Hemp oil contains one of the lowest amounts of saturated fat and the highest amounts of polyunsaturated fats as a nutritional oil.

Please Note: Hemp seed oil and CBD oil are most definitely **NOT** the same thing. CBR oil comes from the leaves and stalks of the plant.

Because Hemp seed oils contain high and mid-oleic fats created from special, non-genetically modified USDA Heart Friendly Corn Hybrid, these specialized oils will undoubtedly lowering HDL "excellent" cholesterol levels. This approaches statin medications, but unlike statins, these oils are 100% natural and have no poor side effects.

With customers coming to be increasingly familiar with the health and wellness benefits of plant sterols in foods, food formulators and grocery stores are strengthening lots of food with these focused plant sterols as well as stanols. Food scientists are establishing brand-new and ingenious handling strategies to remove these plant sterols and stanols from fruits, vegetables, and vegetable oils and they are changing their chemical structures to form esters which can after that be integrated right into foods in a broader focus to accomplish the wellness advantages of these plant sterols in their food products. This food then comes to be healthy and balanced alternatives to items containing unhealthy degrees of high saturated fats and cholesterol, such as butter, lard, whole milk, cheeses, and yogurts. Plant sterols are now being integrated into cereals, bread, low-fat milk, low-fat cheeses, yogurts, ice-creams, salad dressings, margarines, milk, dressings, orange juice, delicious chocolates as well as confectionaries, granola, frostings, donuts, and gravies. They are also being offered as nutritional supplements in soft gel cap form. The CBR modern technology extracts out high oleic and mid-oleic oils without denaturing the nutritional values of the oils.

Perhaps you have seen "high oleic oil" in an active-components checklist on a plan of your food recently. Just what is it; is it healthy and balanced and balanced or unwanted? Below are some fast facts about high oleic (canola, sunflower, corn) oil:

What is "high oleic" oil? High oleic oil is any type of oil that is high in monounsaturated fats. Olive as well as also canola oils are normally high in monounsaturated fat, yet they are in addition high in polyunsaturated fats, which suggest they are not extremely shelf-stable. Recently, researchers have developed sunflower (and different other oils) that are bred to be high in monounsaturated fats as well as low in polyunsaturated fats. They can be used in products that need to be shelf-stable.

Why does the food industry utilize high oleic oil? In the past, food companies used hydrogenated oils (trans fats) to maintain food shelf-stable as well as preserve taste. When companies needed to quit using trans fats, they transformed to high oleic oils or hand kernel oil to make their food last a lot longer for customers. These oils are typically made use of packaged baked products (packaged cakes, cookies, and so on), as spray ending up for grain, biscuits and dried-out fruit, non-dairy creamers, and several kinds of frying.

Is it healthy and balanced? As far as we understand, yes. High oleic oil is high in unsaturated fat, low in saturated fat, as well as has no trans-fat. The considerable quantity of monounsaturated fat in high oleic oil has been revealed to decreased LDL cholesterol (the dangerous kind) without decreasing HDL cholesterol (the great kind). When LDL cholesterol drops, so do the risks of cardiovascular disease, heart attack, along with stroke.

Should I get foods made with high oleic oil? Simply packaged, refined foods will certainly include these oils. It's finest not to count too substantially on these sorts of items anyway, and also to focus on consuming largely entire foods. Nevertheless, if you're likely to obtain packaged, refined food typically, then yes, try to find the term "high oleic sunflower (or numerous other) oil" in the active ingredients noting. This is a much better choice, for we understand that trans-fat (hydrogenated oil) appears in addition to hydrogenated fats.

What oil should I be making use of at home in my own cooking? Added virgin olive oil (for dressings and foods that won't be prepared), canola oil (for cooking when you'll be utilizing high heat) in addition to coconut oil (for cooking, food preparation and/or when you prefer a hint of coconut flavor) are the oils we might recommend. Ensure to select organic oils whenever possible to stay clear of GMOs and consistent harmful pesticides!

High oleic oils remain in high demand for many food and industrial applications. Plant sterols and stanols (also known as phytosterols) are typically found in food grains and vegetables, including corn oil, soybeans, rice bran, wheat

bacterium, nuts, and flavors. The effects of phytosterols on cholesterol decrease have been recorded for nearly fifty years, yet only in the last ten years have they located application in food products. For many years, scientific research studies have suggested that using a couple of grams of plant sterols/stanols per day can decrease low-density lipoprotein (LDL) cholesterol levels by 9.0-20.0 percent. However, this varies amongst people (Source: British Heart Structure, 2002). Furthermore, the raised intake of phytosterols in the diet regimen has additionally been linked to a reduction in coronary heart disease and colon cancer cells.

Specialty oils generated from the USDA's New Heart Friendly Corn are comparable to olive oil. They include 3-4 times greater amounts of monounsaturated oleic oils, which are proven to reduce LDL "negative" cholesterol levels without