



Innovative Uses of Coconut

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Coconut - The prodigy among the fruits is well known for its wide field of application from food to cosmetics. Almost everything of the coconut palm is useful in various applications. Not only the kernel of coconut, but even its stem and leaves are having various usage. The hard shell is used as a fuel, the husk and fiber are wonderful insulation materials for constructing eco-friendly houses. According to Dr. Bruce Fife, a renowned certified nutritionist and naturopathic physician, coconut oil is good in preventing Alzheimer's disease, cancer and other diseases. The uses and benefits of coconuts are kind infinite, as new ways of application of coconut products are discovered day by day.

Coconut oil is rich in fatty acids that are found to be having powerful medicinal properties. It contain Medium Chain Triglycerides (MCTs) that are sent straight to the liver from the digestive tract and are used as a quick source of energy or are turned in to ketones which are said to have therapeutic effects on brain disorders like epilepsy and Alzheimers. Research has proved that people who consume more coconut products are healthy. Coconut oil is helpful in burning more fat and can kill harmful microorganisms. Coconut oil can be used to reduce appetite; can improve the blood cholesterol levels as the saturated fats in coconut oil may increase HDL cholesterol levels and transform the LDL



cholesterol to a less harmful form and hence decrease the risk of heart diseases. The fatty acids in coconut oil are said to boost brain functions in Alzheimer's patients.

Coconut Oil

One of the recent and pioneer innovations is the use of coconut oil is as a Metal Working Fluid (MWF) used in the process of industrial machining. Most of the MWFs used in the industry are mineral oil-based fluids. MWFs are used to cool and lubricate during metal cutting and machining process. Certain studies were held to assess the potential stability of coconut oil in the production of cutting fluid by processing test composites of various mixtures. The research was done for the adequate interpretation of the facts gathered. Since coconut oil does not mix with water without the addition of proper emulsifiers, various emulsifiers were tried and the test results were analysed. Preliminary experiments were done to find the best emulsifiers to use. The first one to test was acacia powder and coco midrib ash and the outcome of the experiment was that their physical and chemical properties were comparable with those of mineral based cutting fluid or MWF available in the market. Coconut oil is found to have long shelf life in contrary to its counterparts. Certain researchers compared it with other vegetable oils like soybean, sunflower and rapeseed oils. It is found that the usage of raw white coconut oil in the form of an emulsion as MWF is better on mild steel in comparison with AISI 304 steel. The use of coconut oil as an MWF has great advantages as it can be used as MWF which is exponentially better in terms of the pollution it creates in the environment in comparison with the petroleum alternatives. It doesn't create any respiratory issues and skin disorders to the workers. The usage of coconut oil also contributes to slower exhaustion of the fossil fuels. Coconut oil is non toxic, renewable, biodegradable and posses high viscosity and flash point which equates to a very low vapor pressure and volatily which in turn eliminates potential hazards during use.

Comparative Information on cutting fluid					
Material Component	Type	Efficiency	Effect to Human skin	Effect on Disposal	Cost
Mineral Oil	Emulsifiable	Highly Efficient	Irritant	Negative	High
Coconut Oil	Emulsifiable	Efficient	Non-Irritant	Eco Friendly	Low

Coconut oil can be used in diesel engines in its raw form, but the direct use of coconut oil possess certain issues with the normal diesel engine due to its high viscosity and high melting point and the tendency to remain solid in colder temperature. In order to solve this situation, bio diesel is produced by a process called trans-esterification. This process converts the coconut oil to biodiesel which very much resembles its petroleum counterpart. The emission from coconut oil engine are far less harmful than the normal diesel engine.

Coconut Oil has a wide variety of uses in cosmetic products. It can be used as a mild sunscreen (SPF 4) which isn't much in comparison with the commercial sunscreens but is far better than bare skin. It is used to manufacture soap due to its fat content. It is also used as moisturizing skin cream, and can be used as diaper cream for babies to avoid symptoms of diaper rash as an alternative to products with Zinc Oxide. Coconut oil is also having the added advantage of washability with regular detergent.

Coconut oil does wonders to hair. When applied at room temperature it acts as a conditioner and makes hair healthier due to its rich content of vitamin E, vitamin K and iron. It gives a natural shine to hair, acts as a cleaning agent for scalp due to its antifungal/antibacterial properties, and also acts as an ideal solution for reducing dandruff. It is also used as flea repellent to avoid bug bites.

Coconut Water

Coconut water with full of nutrients induces lots of health benefits. Mature coconut water consists of electrolytes and is a perfect sports drink. It aids in weight loss and also helps in reducing appetite. Oral consumption and topical application of coconut water helps in maintaining the skin healthy and reduces acne and other blemishes. Its high concentration of fiber facilitates good digestion. Coconut water reduces blood pressure as the electrolytes in it act as a balancing mechanism. Coconut water is fermented to make jellies and other sweet food products. Fresh coconut water can be used as an emergency alternative for saline in IV fluids due to its highly sterile nature and high content of electrolytes. It is also used as a natural diuretic.



Coconut Shell

Coconut shells are used for making activated carbon for filtration purposes. Coconut shells are of high density and are full of micropores. Coconut shells are used to make shell charcoal which is used as domestic and industrial fuel source. The shell is carbonized using various methods like pit method, drum method and destructive distillation methods to produce shell charcoal. Shell charcoal is the raw material for activated carbon and is used by blacksmiths, goldsmiths and in laundries. Coconut shell powder is manufactured from coconut shell which is a by-product of coconut oil industries, and this powder can be used as a filler in synthetic resin glues, filler, bituminous powder, mastic adhesives and mosquito repellents. Coconut shells are used to produce various vintage musical instruments and percussions and are widely used in the music industry for its wide variety of sound effects that it can produce. Coconut shells are also used to manufacture various artifacts and handicrafts which are having a huge market share.

Coconut husk

The husk of fresh coconut is made up of very strong fibers. The medium between the fiber is having a high lignin content which act as a natural glue. These properties can be exploited to produce hard products like Medium Density Fiber (MDF) boards. The fiber is compressed in a mold and then is heated to a certain temperature which produces strong solid board which is similar to MDF boards. These coconut boards are said to be in consideration to use it as floor board in cars. Coconut husk can be used along with latex and formed into furniture of various forms which are self-cushioned and still doesn't lose their shape. Coconut husk is used for the manufacture of hydroponic planting medium. This substance is good for growing orchids, mushrooms and other plants, has excellent moisture retaining capacity, balances the mineral content, maintains good temperature and pH value for plant, is 100 percent natural and can be completely replace soil. It is getting more popular in terrace farming application as well as

in normal gardening. Coconut husk is used to produce ropes, floor mats, rags, brushes and other household items. These products are eco-friendly, cheap and long lasting.

Coconut Meat

Coconut meat, the rich white substance inside coconut shell is juicy, tender, thick and crunchy or strong and fibrous according to the age of the kernel. Coconut meat contains high amount of protein and consists of all the essential amino acids required for the human body. Protein supplements are made with coconut meat by pressing the oil from it which leaves a powder with low fat and high protein. This powder can be added to other protein supplements and is a natural source for complete proteins. The powder after extraction of oil is used as an alternative for flour in various forms of cooking. Coconut meat is sliced, shredded or shaved to thin pieces of coconut and can be microwaved and can be consumed as chips. It doesn't require oil for frying as the oil content in itself is sufficient for the purpose.

Coconut Milk

Coconut milk is the mixture of coconut meat and coconut water. It can be used as a dairy alternative. It is sometimes called a miracle liquid because of its nutritional values and its wonderful ability to increase our body's immunization power which in turn prevent diseases. It lowers the blood pressure, lowers the cholesterol and improves the heart health. The Medium Chain Triglyceride (MCT) fatty acids present in coconut milk increases the energy consumption and increases the physical performance. It helps build muscles and to lose fat. Since it is high in healthy fats it helps avoid overeating.

Coconut tree sap

The sap of the coconut tree can be used to make coconut sugar or nectar and coconut vinegar. Sugar made from coconut sap is said to have unique flavor and can be used as an alternative to cane sugar. Coconut sap sugar is a low glycemic index food which denotes that it is a healthy alternative to other sugars with high glycemic. The Coconut sap sugar consists of sixteen essential amino acids which are very vital for various bodily processes. It includes glutamine which is used to produce glutamic acid which is involved in heart health and brain function. It also contains high levels of essential minerals like Zinc, Magnesium and Potassium and is a rich source of Vitamin B and nutrients like inositol.

Conclusion

Coconut has a wide variety of uses and is a natural replacement to many chemicals. Recent studies even shows that it is an effective alternative in industrial machining processes. Thus coconut help serve the mankind by providing 100 percent natural and quality products. ■