

Chemical Composition:

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. **Polyphenol:** Arecanut contains main biochemical compounds like polyphenol (20%), fat (15%), starch (20%) and alkaloids (0.5%) 3

. The polyphenol, mostly flavonols, include about 10 percent of (+) catechin, 2.5 per cent epicatechin, 12 per cent of (+) leucocyanidin, the remaining portion being complex flavonoids in varying degrees of polymerization 4

. A series of dimeric, trimeric, and tetrameric procyanidins has been isolated from seeds of Areca catechu 5

Flavonols are a class of flavonoids, which are a group of naturally occurring plant compounds with various biological activities. Flavonols are commonly found in a variety of fruits, vegetables, and plant-based foods, including some nuts like areca nuts. **Flavonols have been studied for their potential health effects on the human body.** However, it's important to note that areca nuts also contain other compounds, like arecoline, that can have significant health risks.

Here are some potential effects of flavonols, including those found in areca nuts, on the human body:

Antioxidant Properties: Flavonols are known for their antioxidant properties, which means they can help protect cells from damage caused by oxidative stress. Oxidative stress is linked to various chronic diseases, and antioxidants can play a role in reducing this stress.

Cardiovascular Health: Some studies suggest that flavonols may have a positive impact on cardiovascular health. They may help improve blood vessel function, reduce inflammation, and potentially lower the risk of heart disease.

Anti-Inflammatory Effects: Flavonols have been shown to exhibit anti-inflammatory properties. Chronic inflammation is associated with various health issues, including chronic diseases, so reducing inflammation can be beneficial.

Cognitive Health: Some research indicates that flavonols might have a positive effect on cognitive function and brain health. They could potentially contribute to improved memory and cognitive performance.

Cancer Prevention: Flavonols have been studied for their potential role in cancer prevention. Their antioxidant and anti-inflammatory properties may help inhibit the growth of cancer cells and reduce the risk of certain types of cancer.

Skin Health: Flavonols can also have positive effects on skin health. They may help protect the skin from UV-induced damage and support overall skin health.

Diabetes Management: Some studies suggest that flavonols might help improve insulin sensitivity and glucose metabolism, which could be beneficial for individuals with diabetes.

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Alkaloid: The four major alkaloids isolated in arecanut are arecoline (7.5 mg/g weight), arecaidine (1.5 mg/g weight), guvacoline (2.0 mg/g weight) and guvacine (2.9 mg/g weight) 6

. All these alkaloids are chemically related; arecoline is

colorless volatile resembling nicotine.

ARECOLINE: ARECOLINE IS THE PRIMARY ALKALOID IN ARECA NUTS AND IS RESPONSIBLE FOR MANY OF THE STIMULANT EFFECTS ASSOCIATED WITH CHEWING ARECA NUTS. IT AFFECTS THE CENTRAL NERVOUS SYSTEM AND CAN LEAD TO HEIGHTENED ALERTNESS, INCREASED HEART RATE, AND MILD EUPHORIA. ARECOLINE IS CHEMICALLY SIMILAR TO NICOTINE AND ACTS ON CERTAIN RECEPTORS IN THE BRAIN, INCLUDING MUSCARINIC AND NICOTINIC RECEPTORS. LONG-TERM USE OF ARECOLINE IS LINKED TO VARIOUS HEALTH RISKS, INCLUDING ADDICTION, ORAL CANCER, CARDIOVASCULAR PROBLEMS, AND DIGESTIVE ISSUES.

ARECAIDINE: ARECAIDINE IS ANOTHER ALKALOID PRESENT IN ARECA NUTS. IT ALSO HAS STIMULANT EFFECTS ON THE CENTRAL NERVOUS SYSTEM, SIMILAR TO ARECOLINE. ARECAIDINE'S EFFECTS ARE LESS STUDIED COMPARED TO ARECOLINE, BUT IT LIKELY CONTRIBUTES TO THE OVERALL STIMULATING PROPERTIES OF ARECA NUTS.

GUVACOLINE AND GUVACINE: THESE ALKALOIDS ARE ALSO FOUND IN ARECA NUTS, AND THEY SHARE SIMILARITIES IN THEIR CHEMICAL STRUCTURE WITH ARECOLINE. WHILE THEIR EFFECTS MIGHT NOT BE AS WELL-DOCUMENTED, THEY ARE BELIEVED TO CONTRIBUTE TO THE OVERALL PHYSIOLOGICAL RESPONSE TO ARECA NUT CONSUMPTION.

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Fat: Fat consist 15-17.7% dry weight of arecanut.

Arecanut fatty acid profile are 19.5% lauric acid, 46.2% myristic acid, 12.7% palmitic acid, 1.6% stearic acid, 0.3% decanoic acid, 6.2% oleic acid, 5.4% dodecenoic acid, 0.3%, tetradecenoic acid 0.6% and hexadecenoic acid 7.2%

Lauric Acid: Lauric acid, similar to that found in coconut oil, can impact cholesterol levels by affecting both HDL (good) and LDL (bad) cholesterol. It's also associated with potential antimicrobial properties.

Myristic Acid: This saturated fatty acid might contribute to an increase in LDL cholesterol, which could raise the risk of cardiovascular concerns if consumed excessively.

Palmitic Acid: Similar to myristic acid, palmitic acid is a saturated fatty acid that might elevate LDL cholesterol levels, potentially leading to cardiovascular risks.

Stearic Acid: Stearic acid is unique among saturated fats. It has a smaller impact on cholesterol levels, making it a more neutral choice in terms of its effects.

Oleic Acid: Oleic acid, resembling the fat in olive oil, can promote heart health by positively influencing cholesterol levels, increasing HDL and lowering LDL cholesterol.

Dodecenoic Acid: Information on dodecenoic acid's effects is limited, and its specific impact might not be extensively documented in relation to human health.

Decanoic Acid: This medium-chain fatty acid can have varying metabolic effects and might play a role in diets like the ketogenic diet.

Tetradecenoic Acid: Similar to dodecenoic acid, there might be limited information available about its specific effects on human health.

Hexadecenoic Acid: This monounsaturated fatty acid, which is also found in olive oil, can promote cardiovascular health by influencing cholesterol levels positively.

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Mineral content: The mineral matter includes calcium (0.05%), phosphorus (0.13%) and iron (1.5 mg/100g). It also contains Vitamin B6 (286.9 mg) and Vitamin C (416.2 mg)