

Avocado seed husks could be a gold mine of medicinal and industrial compounds

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Avocado seed husks contain numerous chemical compounds that could be used in medicine and industry. Credit: Debasish Bandyopadhyay

The least appreciated part of an avocado could soon undergo a trash-to-treasure transformation. In a first-of-its-kind study, scientists report that avocado seed husks, which are usually discarded along with the seed, are hidden gold mines packed with a previously unrecognized plethora of chemical compounds. They say these compounds could eventually be used to treat a host of debilitating diseases, as well as to enhance the allure of cosmetics, perfumes and other consumer goods.

The researchers are presenting their work today at the 254th National Meeting & Exposition of the American Chemical Society (ACS). ACS, the world's largest scientific society, is holding the meeting here through Thursday. It features nearly 9,400 presentations on a wide range of science topics.

"It could very well be that avocado [seed](#) husks, which most people consider as the waste of wastes, are actually the gem of gems because the medicinal compounds within them could eventually be used to treat cancer, heart disease and other conditions," says Debasish Bandyopadhyay, Ph.D. "Our results also suggest that the seed husks are a potential source of chemicals used in plastics and other industrial products."

In all, nearly 5 million tons of avocados are produced worldwide annually. Americans consume almost 1.9 billion pounds each year, according to the Hass Avocado Board. In most cases, the "meat," or flesh, is eaten and the seed is tossed in the trash. Some edible oil manufacturers extract avocado oil from the seeds, but they remove the husk surrounding the seed and discard it before processing.

Bandyopadhyay and his students Valerie Cano, Orlando Castillo, Daniel Villicana and Thomas Eubanks at the University of Texas Rio Grande Valley sought to find out more about what manufacturers are really

throwing away when they discard these seed husks.

The researchers ground about 300 dried [avocado](#) seed husks into 21 ounces of powder. After additional processing, the powder yielded about three teaspoons of seed husk oil and slightly more than an ounce of seed husk wax. Using gas chromatography-mass spectrometry analysis, the research team found 116 compounds in the oil and 16 in the wax. Many of these compounds do not appear to be found in the seeds themselves.

Among the constituents in the oil was behenyl alcohol (also known as docosanol), an important ingredient used in anti-viral medications; heptacosane, which might inhibit the growth of tumor cells; and dodecanoic acid, which increases [high density lipoprotein](#) (known as HDL) and, as a result, could reduce the risk of atherosclerosis.

In the wax, the researchers detected benzyl butyl phthalate, a plasticizer used to promote flexibility in numerous synthetic products from shower curtains to medical devices; bis(2-butoxyethyl) phthalate, which is used in cosmetics; and butylated hydroxytoluene (BHT), which is a food additive.

Moving forward, Bandyopadhyay says his team will modify several of these natural compounds so that they can be used to create better medications with fewer side effects.

Provided by American Chemical Society

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