Damian BRADY, *et al.*
Coconut Oil/Enzymes vs Oral Bacteria

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Coconut oil could combat tooth decay

Digested coconut oil is able to attack the bacteria that cause tooth decay. It is a natural antibiotic that could be incorporated into commercial dental care products, say scientists presenting their work at the Society for General Microbiology's Autumn Conference at the University of Warwick.

The team from the Athlone Institute of Technology in Ireland tested the antibacterial action of coconut oil in its natural state and coconut oil that had been treated with enzymes, in a process similar to digestion. The oils were tested against strains of Streptococcus bacteria which are common inhabitants of the mouth. They found that enzyme-modified coconut oil strongly inhibited the growth of most strains of Streptococcus bacteria including Streptococcus mutans - an acid-producing bacterium that is a major cause of tooth decay.

Many previous studies have shown that partially digested foodstuffs are active against micro-organisms. Earlier work on enzyme-modified milk showed that it was able to reduce the binding of S. mutans to tooth enamel, which prompted the group to investigate the effect of other enzyme-modified foods on bacteria.

Further work will examine how coconut oil interacts with Streptococcus bacteria at the molecular level and which other strains of harmful bacteria and yeasts it is active against. Additional testing by the group at the Athlone Institute of Technology found that enzyme-modified coconut oil was also harmful to the yeast Candida albicans that can cause thrush.

The researchers suggest that enzyme-modified coconut oil has potential as a marketable antimicrobial which could be of particular interest to the oral healthcare industry. Dr Damien Brady who is leading the research said, "Dental caries is a commonly overlooked health problem affecting 60-90% of children and the majority of adults in industrialized countries. Incorporating enzyme-modified coconut oil into dental hygiene products would be an attractive alternative to chemical additives, particularly as it works at relatively low concentrations. Also, with increasing antibiotic resistance, it is important that we turn our attention to new ways to combat microbial infection."

The work also contributes to our understanding of antibacterial activity in the human gut. "Our data suggests that products of human digestion show antimicrobial activity. This could have implications for how bacteria colonize the cells lining the digestive tract and for overall gut health," explained Dr Brady. "Our research has shown that digested milk protein not only reduced the adherence of harmful bacteria to human intestinal cells but also prevented some

of them from gaining entrance into the cell. We are currently researching coconut oil and other enzyme-modified foodstuffs to identify how they interfere with the way bacteria cause illness and disease," he said.

Related Patents

Artificial cream base oil rapidly prepared by adopting microwave-enzyme-method ester exchange and preparation method thereof
CN108185021

The invention belongs to the technical field of foods, and specifically relates to artificial cream base oil rapidly prepared by adopting microwave-enzyme-method ester exchange and a preparation method thereof. The preparation method of the artificial cream base oil rapidly prepared by adopting microwave-enzyme-method ester exchange comprises the following steps of uniformly mixing liquid oil withsolid oil according to a mass ratio of 1 to 1 to 1 to 9; adding natural coconut oil into the mixture of the liquid oil and the solid oil, wherein the addition amount of the natural coconut oil is 10-30% of the total mass of the mixture; carrying out thorough stirring, and adding solidified lipase Lipozyme TM IM, wherein the addition amount of the solidified lipase Lipozyme TM IM is 2-6% of the total mass of the substrate; carrying out reaction in the presence of microwave by adopting a pulse mode, wherein the microwave power is 400-600 watts, the microwave irradiation temperature is 50-70 DEGC, the stirring rate is 100-300rpm/min and the reaction time is 5-25 minutes; and then, removing the solidified lipase Lipozyme TM IM after the reaction by performing centrifuging so as to obtain theartificial cream base oil. The preparation method of the artificial cream base oil rapidly prepared by adopting microwave-enzyme-method ester exchange is highly effective, energy-saving, and simple in operations; moreover, reaction time of enzyme-method ester exchange can be greatly shortened. And thus, the prepared artificial cream base oil is free of trans-fatty acid, and high in nutritional values. The preparation method of the artificial cream base oil rapidly prepared by adopting microwave-enzyme-method ester exchange can be used for replacing conventional enzyme-method ester exchange soas to produce artificial cream base oil.

Method for production of an upgraded coconut product
US4904483

The method for production of an upgraded coconut product comprises the steps of: enzymatically treating an aqueous suspension of particles of coconut meat, which may be purified, with a cell wall degrading enzyme and a galactomannase, all essentially free from lipases, and separating a sludge phase. By means of this method a higher yield of directly recoverable clear coconut oil can be obtained in comparison to the yield of directly recoverably clear coconut oil produced by known methods for aqueous coconut oil extraction.

VIRGIN COCONUT OIL AND PRODUCTION THEREOF

SG142133

Virgin Coconut Oil And Production Thereof A method of recovering at least one coconut extract including a coconut oil from fresh coconut is disclosed. The method includes steps of (1) grinding the coconut and forming a slurry, (2) if necessary, adjusting the pH of the slurry to at least slightly more alkaline than neutral, (3) adding a protein enzyme to the slurry, (4) incubating the slurry and enzyme mixture for a predetermined period of time and at an predetermined elevated temperature of less than 70oC, preferably with at least intermittent agitation, (5) adjusting the pH to from 3.5 to 5, (6) heating the pH adjusted incubated mixture to a temperature from 80 to 99oC for a time of from 2.5 minutes to 10 minutes, and (7) centrifuging the resultant mixture to separate the coconut oil. In the method, an aqueous fraction may be recovered which can be used as a food or drink ingredient.

MECHANISM AND REACTION OF UNKNOWN EXCELLENT ENZYME BACTERIA BY COCONUT OIL
JPH01117783

PURPOSE:To obtain an oil and fat enzyme having health-promoting action, by inserting an alkaline spongy body in coconut oil and applying a magnetic flux of a prescribed intensity to the spongy body, thereby producing an enzyme by the mutual reaction of an oil and fat protein, the spongy body and a fatty acid. CONSTITUTION:Coconut oil is optionally mixed with edible oil such as soybean oil or rapeseed oil and an alkaline spongy body is inserted into the oil. The magnetic flux of 1,300 gauss is applied to the system for about 30min to cause the mutual reaction of an oil and fat protein, the spongy body, a fatty acid, etc., and to form an enzyme by the fusion of the oil and fat cell and the spongy body cell to a basic body. The obtained enzyme is effective as a remedy for diseases of digestive organs, etc.

DECOMPOSITION OF FATS AND OILS BY ENZYME
JPH0286787

PURPOSE:To efficiently decompose coconut oil, etc., by using a lipase produced by a mutant of Candida.cylindracea and having a high decomposing action on fats and oils containing short chain- and moderate-length chain fatty acids. CONSTITUTION:Fats and oils are decomposed by using a lipase produced by Candida.cylindracea and having a higher specificity to <18C fatty esters than to >=18C fatty esters. In addition a strain (FERM no. 10282) produced by mutation of the above-mentioned Candida.cylindracea is preferably used.

PREPARATION OF SOLID FAT DECOMPOSITION ENZYME
JPS6135783

PURPOSE:To obtain a solid fat decomposition enzyme in high yield and reproducibility, effectively preventing the foaming during the cultivation, by adding a liquid oil and an ether-type surfactant to the system in the preparation of the solid fat decomposition enzyme by the

culture of a microorganism capable of producing a solid fat decomposition enzyme. CONSTITUTION:A conventional medium used in the cultivation of a microbial strain capable of producing a solid fat decomposition enzyme is added with about 0.005-10wt% liquid oil (e.g. soybean oil) and about 0.001-10wt% ether- type surfactant (e.g. polyoxyethylene alkyl ether). A microbial strain capable of producing a solid fat decomposition enzyme (e.g. Pseudomonas fluorescens biotype I-No.1021) is inoculated in the medium, and cultured under aeration and agitation. The produced solid fat decomposition enzyme is separated from the culture liquid, and purified. The solid fat decomposition enzyme produced by the process is effective to decompose a solid fat such as coconut oil into the constituent fatty acid and glycerol, and is useful in the fatty acid production industry.