

Food Dye Analysis Lab Report

Carmine

2022. Miller, Brittney J. (25 March 2022). "Cochineal, a red dye from bugs, moves to the lab". Knowable Magazine. doi:10.1146/knowable-032522-1. Pearson

Carminium () - also called cochineal (when it is extracted from the cochineal insect), cochineal extract, crimson lake, or carmine lake - is a pigment of a bright-red color obtained from the aluminium complex derived from carminic acid. Specific code names for the pigment include natural red 4, C.I. 75470, or E120. Carmine is also a general term for a particularly deep-red color.

Cochineal

carminium dye, also known as cochineal. Today, carminium is primarily used as a colorant in food and in lipstick (E120 or Natural Red 4). Carmine dye was used

The cochineal (KOTCH-in-EEL, -eel, US also KOH-chin-; Dactylopius coccus) is a scale insect in the suborder Sternorrhyncha, from which the natural dye carminium is derived. A primarily sessile parasite native to tropical and subtropical South America through North America (Mexico and the Southwest United States), this insect lives on cacti in the genus Opuntia, feeding on plant moisture and nutrients. The insects are found on the pads of prickly pear cacti, collected by brushing them off the plants, and dried.

The insect produces carminic acid that deters predation by other insects. Carminic acid, typically 17-24% of dried insects' weight, can be extracted from the body and eggs, then mixed with aluminium or calcium salts to make carminium dye, also known as cochineal. Today, carminium is primarily...

Insects as food

a red dye used for textiles and food. It was largely substituted with synthetic dyes like alizarin. Fears over the safety of artificial food additives

Insects as food or edible insects are insect species used for human consumption. Over 2 billion people are estimated to eat insects on a daily basis. Globally, more than 2,000 insect species are considered edible, though far fewer are discussed for industrialized mass production and regionally authorized for use in food. Many insects are highly nutritious, though nutritional content depends on species and other factors such as diet and age. Insects offer a wide variety of flavors and are commonly consumed whole or pulverized for use in dishes and processed food products such as burger patties, pasta, or snacks. Like other foods, there can be risks associated with consuming insects, such as allergic reactions. As commercial interest in insects as food grows, countries are introducing new regulatory...

COVID-19 lab leak theory

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The COVID-19 lab leak theory, or lab leak hypothesis, is the idea that SARS-CoV-2, the virus that caused the COVID-19 pandemic, came from a laboratory. This claim is highly controversial; there is a scientific consensus that the virus is not the result of genetic engineering, and most scientists believe it spilled into human populations through natural zoonosis (transfer directly from an infected non-human animal), similar to the SARS-CoV-1 and MERS-CoV outbreaks, and consistent with other pandemics in human history. Available evidence suggests that the SARS-CoV-2 virus was originally harbored by bats, and spread to humans from infected wild animals, functioning as an intermediate host, at the Huanan Seafood Market in Wuhan, Hubei, China, in December 2019. Several candidate animal species have...

Eggs as food

January 2022. This was shown experimentally and documented in the book The Food Lab: Better Home Cooking Through Science by J. Kenji López-Alt; published 21

Humans and other hominids have consumed eggs for millions of years. The most widely consumed eggs are those of fowl, especially chickens. People in Southeast Asia began harvesting chicken eggs for food by 1500 BCE. Eggs of other birds, such as ducks and ostriches, are eaten regularly but much less commonly than those of chickens. People may also eat the eggs of reptiles, amphibians, and fish. Fish eggs consumed as food are known as roe or caviar.

Hens and other egg-laying creatures are raised throughout the world, and mass production of chicken eggs is a global industry. In

2009, an estimated 62.1 million metric tons of eggs were produced worldwide from a total laying flock of approximately 6.4 billion hens. There are issues of regional variation in demand and expectation, as well as current...

DNA microarray

technologies Serial analysis of gene expression RNA-Seq MAGIChip Microarray analysis techniques Microarray databases Cyanine dyes, such as Cy3 and Cy5

A DNA microarray (also commonly known as a DNA chip or biochip) is a collection of microscopic DNA spots attached to a solid surface. Scientists use DNA microarrays to measure the expression levels of large numbers of genes simultaneously or to genotype multiple regions of a genome. Each DNA spot contains picomoles (10–12 moles) of a specific DNA sequence, known as probes (or reporters or oligos). These can be a short section of a gene or other DNA element that are used to hybridize a cDNA or cRNA (also called anti-sense RNA) sample (called target) under high-stringency conditions. Probe-target hybridization is usually detected and quantified by detection of fluorophore-, silver-, or chemiluminescence-labeled targets to determine relative abundance of nucleic acid sequences in the target....

Hair analysis

the past 2–3 days; hair analysis can sometimes detect use as far as 90 days, although certain cosmetic treatments (e.g. dyeing hair) can interfere with

Hair analysis may refer to the chemical analysis of a hair sample, but can also refer to microscopic analysis or comparison. Chemical hair analysis may be considered for retrospective purposes when blood and urine are no longer expected to contain a particular contaminant, typically three months or less.

Its most widely accepted use is in the fields of forensic toxicology, in pre-employment drug testing and, increasingly, in environmental toxicology. Several alternative medicine fields also use various hair analyses for environmental toxicology, but these uses are controversial, evolving, and not standardized.

Microscopic hair analysis has traditionally been used in forensics as well. Analysts examine a number of different characteristics of hairs under a microscope, usually comparing hair...

Microfluidics

microfluidics, and lab-on-a-chip are used in the realm of food science in a variety of categories. Research in nutrition, food processing, and food safety benefit

Microfluidics refers to a system that manipulates a small amount of fluids (10⁻⁹ to 10⁻¹⁸ liters) using small channels with sizes of ten to hundreds of micrometres. It is a multidisciplinary field that involves molecular analysis, molecular biology, and microelectronics. It has practical applications in the design of systems that process low volumes of fluids to achieve multiplexing, automation, and high-throughput screening. Microfluidics emerged in the beginning of the 1980s and is used in the development of inkjet printheads, DNA chips, lab-on-a-chip technology, micro-propulsion, and micro-thermal technologies.

Typically microfluidic systems transport, mix, separate, or otherwise process fluids. Various applications rely on passive fluid control using capillary forces, in the form of capillary...

Bruce Ames

identification led to some of those formulations, such as chemicals used in hair dye, being withdrawn from commercial use. The ease with which Ames test allows

Bruce Nathan Ames (December 16, 1928 - October 5, 2024) was an American biochemist who was a professor of biochemistry and Molecular Biology Emeritus at the University of California, Berkeley, and was a senior scientist at Children's Hospital Oakland Research Institute (CHORI). Ames made contributions to understanding the mechanisms of mutagenesis and DNA repair. He invented the Ames test, a widely used assay for easily and cheaply evaluating the mutagenicity of compounds. The test revolutionized the field of toxicology and has played a crucial role in identifying numerous environmental and industrial carcinogens.

Lacticaseibacillus casei

the largest genus in the family Lactobacillaceae, a lactic acid bacteria (LAB), that was previously classified as Lactobacillus casei. This bacteria has

Lacticaseibacillus casei is an organism that belongs to the largest genus in the family Lactobacillaceae, a lactic acid bacteria (LAB), that was previously classified as Lactobacillus casei. This bacteria has been identified as facultatively anaerobic or microaerophilic, acid-tolerant, non-spore-forming bacteria.

This species is a non-sporing, rod-shaped, gram positive microorganism that can be found within the reproductive and digestive tract of the human body. Since *L. casei* can survive in a variety of environmental habitats, it has and continues to be extensively studied by health scientists. Commercially, *L. casei* is used in fermenting dairy products and its application as a probiotic.

In bacteraemia, it is regarded to be similar in pathogenicity to *Lactobacillus* and associated with infective...

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