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We recognize the responsibility that comes along with being the most well-known and trusted health information platform and we take that responsibility seriously by:01Charging our content creators to practice journalistic principles of excellence and provide objective, accurate, and balanced reporting02Maintaining editorial independence and transparency into how we protect the integrity of our content03Regularly reviewing and updating our content by working with our network of more than 100 doctors and health expertsLearn more about our Editorial Process ChemicalBook >> CAS DataBase List >>Olive oil Olive oil structure CAS No. 8001-25-0 Chemical Name: Olive oil Synonyms OLEA EUROPAEA (OLIVE) FRUIT OIL;OLIVE;OLIVE FRUIT EXTRACT;OLIVE POMACE OIL;OLIVE OIL, EXTRA VIRGIN;sweetoil;Luccu oil;OLIVE OIL;Cropure OL;OLIVEOIL,NF CBNumber: CB3120475 Molecular Formula: N/A Molecular Weight: 0 MDL Number: MFCD00131764 MOL File: Mol file Last updated:2025-04-29 17:45:46 Density 0.9135 vapor density >1 (vs air) refractive index 1.467-1.471 FEMA 4801 | OLIVE FRUIT EXTRACT Flash point 225 C storage temp. room temp solubility Slightly soluble in ethanol (95%); miscible with ether,chloroform, light petroleum (5070C), and carbon disulfide. form Viscous Liquid Specific Gravity 0.912 (20/4) color Yellow Odor pleasing, delicate flavor Odor Type green Water Solubility Insoluble in water FDA 21 CFR 161.190 FDA UNII 6UYK2W1W1E NCI Drug Dictionary olive oil EPA Substance Registry System Olive oil (8001-25-0) UNSPSC Code 41116107 NACRES NA.24 SAFETY Risk and Safety Statements Olive oil price More Price(10) Manufacturer Product number Product description CAS number Packaging Price Updated Buy Sigma-Aldrich 47118 Olive oil analytical standard 8001-25-0 1000MG $69.1 2024-03-01 Buy Sigma-Aldrich 1478265 Olive oil 8001-25-0 500mg $243.6 2024-03-01 Buy Sigma-Aldrich 1478254 Olive oil United States Pharmacopeia (USP) Reference Standard 8001-25-0 5X200MG $429 2024-03-01 Buy Sigma-Aldrich 1478254 Olive oil 8001-25-0 1g $462 2024-03-01 Buy Sigma-Aldrich O1514 Olive oil 8001-25-0 100ml $59.6 2024-03-01 Buy Product number Packaging Price Buy 47118 1000MG $69.1 Buy 1478265 500mg $243.6 Buy 1478254 5X200MG $429 Buy 1478254 1g $462 Buy O1514 100ml $59.6 Buy Olive oil Chemical Properties,Uses,Production C16 palmitic: 8.0% palmitoleic; C18 stearic: 2.0% oleic, 82.0% linoleic, 8.0% linolenic; total saturated acids: 14%; totalmonounsaturated acids: 77%; total polyunsaturated acids: 9% clear yellow viscous liquid Olive oil is the fixed oil obtained by cold expression or othersuitable mechanical means from the ripe drupes of Olea europaea. Itoccurs as a clear, colorless or yellow, transparent oily liquid. It maycontain suitable antioxidants. Refined olive oil is obtained by refining crude olive oil such thatthe glyceride content of the oil is unchanged. A suitable antioxidantmay be added. Olive oil is used in food of salads, with sardines, etc.; emollient; for treatment of leg ulcers; in the manufacturing of soaps, textile lubricants,cosmetics, and pharmaceutical products. Pharmaceutic aid. Olive Oil is the oil obtained from the fruit of olive trees, olea europaea. it is used mainly for salad and cooking oils. Virgin olive oil is produced by crushing olives (the fruit of Oleaeuropaea), typically using an edge runner mill. The oil is thenexpressed from the crushed mass solely by mechanical or otherphysical methods under conditions that do not cause deteriorationof the oil. Any further treatment that the oil undergoes is limited towashing, decantation, centrifugation, and filtration.Refined olive oil is obtained from virgin olive oil by refiningmethods that do not alter the initial glyceride content of the oil. Extractives and their physically modified derivatives. It consists primarily of the glycerides of the fatty acids linoleic, oleic and palmitic. Pale yellow oily liquid. Insolube in water and less dense than water. Hence floats on water. Contains principally glycerides of oleic, palmitic and linoleic acids. Insoluble in water. Olive oil react with acids to liberate heat. Heat is also generated by interaction with caustic solutions. Strong oxidizing acids may cause a vigorous reaction that is sufficiently exothermic to ignite the reaction products. Flammable hydrogen is generated by mixing with alkali metals and hydrides. React slowly with oxygen in the air to become rancid. None-is a food. Olive oil is a clear, edible substance obtained from thefruits of olive trees, the evergreen trees grown inMediterranean climates. The fruit is pulped, pressed andfinally extracted for oil. The best quality comes from thefust pressing of just ripened fruits. The unripe fruits arepickled, treated with a lye solution to remove the bittertaste, and stored in brine. When left in the open, they turnblack and may be pressed thereafter for oil. Olive oil has been used in enemas, liniments, ointments, plasters,and soap. It has also been used in oral capsules and solutions, and asa vehicle for oily injections including targeted delivery systems.It has been used in topically applied lipogels of methylnicotinate.It has also been used to soften ear wax. Olive oilhas been used in combination with soybean oil to prepare lipidemulsion for use in pre-term infants.Olive oil is used widely in the food industry as a cooking oil andfor preparing salad dressings. In cosmetics, olive oil is used as asolvent, and also as a skin and hair conditioner. Types of productscontaining olive oil include shampoos and hair conditioners,cleansing products, topical creams and lotions, and sun-tanproducts. Moderately toxic by intraperitoneal route. A human skin irritant. Combustible when exposed to heat or flame; can react with oxidzing materials. Some spontaneous heating. To fight fire, use CO_2, dry chemical. When heated to decomposition it emits acrid smoke and irritating fumes Olive oil is used widely as an edible oil and in food preparations andproducts such as cooking oils and salad dressings. It is used incosmetics and topical pharmaceutical formulations. Olive oil isgenerally regarded as a relatively nonirritant and nontoxic materialwhen used as an excipient. Olive oil is a demulcent and has mild laxative properties whentaken orally. It has been used in topical formulations as an emollientand to sooth inflamed skin; to soften the skin and crusts in eczema;in massage oils; and to soften earwax. There have been isolated reports that olive oil may cause areaction in hypersensitive individuals. However, these incidences arerelatively uncommon.Olive oil is an infrequent sensitizer anddoes not appear to be a significant allergen in the USA, possibly dueto the development of oral tolerance. When cooled, olive oil becomes cloudy at approximately 10C, andbecomes a butterlike mass at 0C. Olive oil should be stored in a cool, dry place in a tight, wellfilledcontainer, protected from light. For refined oil intended for use in the manufacture of parenteraldosage forms, the PhEur 6.2 requires that the bulk oil be storedunder an inert gas. Olive oil may be saponified by alkali hydroxides. As it contains ahigh proportion of unsaturated fatty acids, olive oil is prone tooxidation and is incompatible with oxidizing agents. Olive oil is an edible oil. Included in the FDA Inactive IngredientsDatabase (oral capsules and solution; topical solutions). Included innonparenteral medicines licensed in Europe. Included in theCanadian List of Acceptable Non-medicinal Ingredients. Fornontopical uses, refined olive oil is generally preferred. Olive oil Suppliers Global(312)Suppliers Belgium 1 China 224 Europe 2 France 1 Germany 2 India 29 Japan 4 Switzerland 1 United Kingdom 3 United States 44 USA 1 Global 312 Related articles OLIVAE OLEUM OLIVE OIL, PURE/RIVIERA OLIVE OIL, REFINED A OIL OF OLIVE sweetoil OLIVE OIL, PH EUR OLIVE OIL, MIXTURE OLIVE OIL, 1000MG, NEAT OLIVE OIL, HIGHLY REFINED, LOW ACIDITY Oliveoil,withoutspecification Oliveoil,rectified Oliveoil,virginextra Olive Oil, refined, pure olivae oleum virginale OLIVEOIL,NF HIGHOLEICOLIVEOIL EXTRAVIRGINOLIVEOIL ARBEQUINAOLIVEOIL VIRGINOLIVEOIL PICUALOLIVEOIL HOJIBLANCAOLIVEOIL HEATEDREFINEDOLIVEOIL HIGH-PHENOLEXTRAVIRGINOLIVEOIL PHENOL-RICHEXTRAVIRGINOLIVEOIL REFINEDOLIVEOIL LAMPANTEOLIVEOIL OLIVIER ABS. OLEA EUROPAEA (OLIVE OIL) OLIVE OIL, EDIBLE Olive Oil (1 g) Olive oil, virgin, pure Olive oil,pure,refined Olive oil,pure,virgin Olive oil,Olivae oleum virginale Luccu oil Olive Oil (AS) Olive Oil (1 g) (AS) Olive oil, refined, pure 500GR OLIVE OIL Olive oil Pomace fupengziyoui Olive Virgin Oil Olive Oil,AR Cropure OL olive oil absolute olive leaf absolute olea europaea fruit extract olea europaea seed olea europaea seed powder Olive oil, analytical standard Olive oil, puriss Olive oil, italic origin OLIVE OLEA EUROPAEA (OLIVE) FRUIT OIL OLIVE OIL, EXTRA VIRGIN OLIVE POMACE OIL OLIVE FRUIT EXTRACT Purified Olive Oil This site uses cookies This website uses cookies and similar technologies to store and retrieve information about your use of this website. This information helps us to provide, analyse and improve our services, which may include personalised content or advertising. We may share this information with Google and other third parties. This cookies are necessary for our website to work properly . By clicking "Continue" or continuing to browse our site you are agreeing to our and our partners use of cookies. Olive oil is composed mainly of triacylglycerols (triglycerides or fats) and contains small quantities of free fatty acids (FFA), glycerol, phosphatides, pigments, flavor compounds, sterols, and microscopic bits of olive. Triacylglycerols are the major energy reserve for plants and animals. Chemically speaking, these are molecules derived from the natural esterification of three fatty acid molecules with a glycerol molecule. The glycerol molecule can simplistically be seen as an "E-shaped" molecule, with the fatty acids in turn resembling longish hydrocarbon chains, varying (in the case of olive oil) from about 14 to 24 carbon atoms in length. FATTY ACIDSPlease note that we are dealing here with fatty acids forming part of the triacylglycerol molecule. We will address the free fatty acids in the next section. The fatty acid composition of olive oil varies widely depending on the cultivar, maturity of the fruit, altitude, climate, and several other factors.A fatty acid has the general formula: $CH_3(CH_2)_nCOOH$ where n is typically an even number between 12 and 22.If no double bonds are present the molecule is called a saturated fatty acid.If a chain contains double bonds, it is called an unsaturated fatty acid.A single double bond makes a monounsaturated fatty acid.More than one double bond makes a polyunsaturated fatty acid.The major fatty acids in olive oil triacylglycerols are:Oleic Acid (C18:1), a monounsaturated omega-9 fatty acid. It makes up 55 to 83% of olive oil.Linoleic Acid (C18:2), a polyunsaturated omega-6 fatty acid that makes up about 3.5 to 21% of olive oil.Palmitic Acid (C16:0), a saturated fatty acid that makes up 7.5 to 20% of olive oil.Stearic Acid (C18:0), a saturated fatty acid that makes up 0.5 to 5% of olive oil.Linolenic Acid (C18:3)(specifically alpha-Linolenic Acid), a polyunsaturated omega-3 fatty acid that makes up 0 to 1.5% of olive oil.Triacylglycerols are normally composed of a mixture of three fatty acids. Most prevalent in olive oil is the oleic-oleic-oleic (OOO) triacylglycerol, followed, in order of incidence, by palmitic-oleic-oleic (POO), then oleic-oleic-linoleic (OOL), then palmitic-oleic-linoleic (POL), then stearic-oleic-oleic (SOO), and so on.Olive oil contains more oleic acid and less linoleic and linolenic acids than other vegetable oils, that is, more monounsaturated than polyunsaturated fatty acids. This renders olive oil more resistant to oxidation because generally, the greater the number of double bonds in the fatty acid, the more unstable and easily broken down by heat, light, and other factors the oil is. It is generally accepted that cooler regions (e.g. Tuscany) will yield oil with higher oleic acid than warmer climates. That is, a cool region olive oil may be more monounsaturated in content than a warm region oil.Trans Fatty AcidsNote that olive oil has no trans fatty acids. When oil is partially hydrogenated, it can be in the cis or trans conformation; this refers to which side of the fatty acid double bond the hydrogen is on. Olive oil is not a trans fatty acid because it has not been partially hydrogenated in a factory to make it solid at room temperature like margarine has.Long Chain Fatty AcidsLong chain fatty acids have from 12 to 20 carbon atoms. The primary fatty acids in olive oil are all long chain fatty acids. Very long-chain fatty acids have greater than 20 carbon atoms. These tend to be more solid at room temperature, such as waxes. There are not appreciable amounts of these in olive oil.Percentage of Linolenic Acid Allowed in Olive OilRegarding the polyunsaturated fatty acids (PUFAs), there is a wide range acceptable for extra virgin olive oil, however the linolenic acid has to be less than 0.9% per the International Olive Oil Council (IOOC) guidelines. Higher levels, e.g. 1.5%, do not present a nutritional problem, but the IOOC uses the linolenic acid level to establish the authenticity of the olive oil. Seed oils like canola oil have higher levels of linolenic acid.Essential Fatty AcidsIn scientific writing the term essential fatty acid refers to all the omega-3 or omega-6 fatty acids. This is a historical convention, not a medical definition. From a medical point of view, essential fatty acids are the ones that the human body cannot make. There are only two, which are the building blocks from which many of the other omega-3 and omega-6 fatty acids are made in a healthy body: linoleic acid and alpha-linolenic acid.FREE FATTY ACIDS (FFA) AND ACIDITYThe "acidity" in olive oil is the result of the degree of breakdown of the triacylglycerols, due to a chemical reaction called hydrolysis or lipolysis, in which free fatty acids are formed. (In exceptional circumstances, even oils made from fresh, healthy olives can have significant amounts of acidity, caused by anomalies during the actual biosynthesis of the oil in the olive fruit). Oil extracted carelessly and/or from poor quality fruit suffers from a very significant breakdown of the triacylglycerides into fatty acids. These "broken off" fatty acids are called Free Fatty Acids. Sometimes just one of the three fatty acids breaks off, leaving a diacylglycerol. If two fatty acids break off, we are left with a monoacylglycerol. If all three break off, were are left with glycerol.Factors which lead to a high free fatty acidity in an oil include fruit fly infestation, delays between harvesting and extraction (especially if the fruit has been bruised or damaged during harvesting), fungal diseases in the fruit (gloesporium, macrophoma, etc.), prolonged contact between oil and vegetation water (after extraction), and careless extraction methods. Storing olives in heaps or silos to encourage enzymatic breakdown of cell structure, and thus facilitate oil release (as is the tradition in Portugal and other countries) is certainly not conducive to producing a high quality, low acidity oil.The free fatty acidity is thus a direct measure of the quality of the oil, and reflects the care taken right from blossoming and fruit set to the eventual sale and consumption of the oil.Measurement of free fatty acidity is a very simple procedure which can be done at a testing lab. The results are presented as grams of oleic acid per 100 grams oil, commonly known as the free fatty acidity of the oil in percent. Freshly pressed oil, made carefully, without the use of excessive heat, from sound, healthy, freshly picked olives, normally has a pretty low "acidity", well under 0.5% FFA. Extra virgin olive oils have less than 0.8% FFA.POLYPHENOLS (ANTIOXIDANTS)The flavenoid polyphenols in olive oil are natural antioxidants that contribute to a bitter taste, astringency, and resistance to oxidation. They have been shown to have a host of beneficial effects from healing sunburn to lowering cholesterol, blood pressure, and risk of coronary disease. Read more about the health benefits of these critical components of olive oil.Hydroxytyrosol and tyrosol are some of the many phenol compounds in olive oil. There are as many as 5 mg of polyphenols in every 10 grams of olive oil. Many other nut and seed oils have no polyphenols. The polyphenol content is determined by many factors including:Olive Varietal: Koroneiki olives, for instance have a very high level of polyphenols, while Arbequinas content is low. The content of Frantoio olives is medium-high and that of Leccino medium.Time of Picking: Oil made from green (unripe) olives has more polyphenols than oil made from ripe olives. The polyphenol concentration increases with fruit growth until the olives begin to turn purple and then begins to decrease.Environmental Factors such as altitude, cultivation practices, and the amount of irrigation.Extraction Conditions: Techniques used to enhance yield, such as heating the paste, adding water, and increasing malaxation time, result in a loss of polyphenols.Storage Conditions: The type of containers and the length of storing are key factors in the oils polyphenol content. As oil sits in storage tanks or in a bottle, the polyphenols will slowly be oxidized and used up. Oils stored in stainless steel containers or dark glass bottles, in cool conditions, are much better protected against oxidation than those bottled in clear glass.Refining: Olive oil which is old, rancid, made from diseased olives, or has some other defect can be made palatable by refining. This is done by filtering, heating, charcoal, or chemical treatment to adjust acidity. Refined oils are low in tyrosol and other phenols.PEROXIDESPeroxides are the primary products of oxidation of olive oil. Fats and oils such as olive oil are oxidized when they come in contact with oxygen. Oxygen may exist in the headspace of the container and dissolve in the oil. The oxidation products have an unpleasant flavor and odor and may adversely affect the nutritional value of the oil. Essential fatty acids such as linoleic and linolenic are destroyed, and certain fat soluble vitamins disappear. Fatty acids are oxidized by one of the following mechanisms.Auto-oxidationAuto-oxidation occurs in the absence of air by reactive oxygen species or "free radicals". It is temporarily prevented by the natural antioxidants in the oil that absorb these free radicals. When the antioxidants are used up, the oil ages quickly.Photo-oxidationPhoto-oxidation occurs when the oil is exposed to natural and/or artificial light sources (including halogen lights and store lights). It causes serious deterioration of olive oil, as it can occur up to 30,000 times faster than auto-oxidation.The more rancid or oxidized the oil, the more peroxides are present. Measurement of the peroxides in olive oil is a very simple procedure which can be done at a testing lab. High quality extra virgin olive oils have a peroxide value of less than 10meq/kg. In order to be extra virgin, olive oil must have less than 20 meq/kg.PIGMENTS AND COLORThe unique color of olive oil is due to pigments like chlorophyll, pheophytin, and carotenoids. The presence of various pigments depends on factors such as the fruit ripeness, the olive cultivar, the soil and climatic conditions, and the extraction and processing procedures.According to Apostolos Kiritsakis, one of the premier researchers on olive oil components, fresh olive oil contains between 1 and 10 parts per million chlorophyll. This is miniscule compared to a portion of spinach. Olives are invariably crushed with some leaves still present, so some of the chlorophyll comes from that source. Some producers have been known to deliberately allow leaves in the mill to increase the "grassiness" of the oil.In the light, chlorophyll and pheophytin will promote formation of oxygen radicals and speed up oxidation, but in the dark chlorophyll acts as an antioxidant. In current physiological studies, chlorophyll is broken down in the body and has no effect as an oxidant or antioxidant.The color of olive oil can vary from a light gold to a rich green. Green olives produce a green oil because of the high chlorophyll content. Ripe olives yield a yellow oil because of the carotenoid (yellow red) pigments. The exact combination and proportions of pigments determine the final color of the oil.VITAMINSVitamins can be divided into the fat soluble and water soluble varieties. Fat soluble vitamins, such as the ones found in olive oil, are generally not broken down by cooking. They are stored in the liver and body fat for long periods so it is not essential to eat them with every meal. Cured whole olives have both water and fat soluble vitamins.Vitamin E Vitamin E is a natural antioxidant. Olives have 1.6mg, or 2.3 IU (International Units) per tablespoon. One tablespoon provides 8% of RDA for vitamin E.Vitamin KThe richest sources of vitamin K are green, leafy vegetables. One serving of spinach or collards, for instance, or two servings of broccoli provide four to five times the RDA. The greener the vegetable, the higher the content, say the researchers, because the vitamin is associated with the chlorophyll. According to the USDA , vegetable oils such as olive oil are the second best source.POLYCYCLIC AROMATIC HYDROCARBONS (PAHs)Many foods naturally contain small quantities of PAHs. Olive oil, like other vegetable cooking oils, has been found to contain minute amounts of up to 17 PAHs such as benzanthracene and chrysene. Unripe olives tended to have more than ripe olives.Burning any cooking oil can increase the amounts of PAHs. This is not considered a major risk source in the diet and the oil would have to be heated repeatedly and for extended periods to the smoking point. It is unlikely that, in home use, olive oil or other cooking oils would be a significant source of PAHs.FREEZING POINTOlive oil will harden at refrigerator temperatures - around 37-39F. Determining at what point to call the oil "frozen" is a matter of semantics. The slow increase in hardening as the temperature is lowered is in sharp contrast to a pure substance such as water that switches from a liquid to solid phase at an exact temperature. Olive oil is a complex mixture of oils and waxes. The heavier oils and waxes will form needle-like crystals as the temperature is lowered, then the other oils will start to settle out.At 40F most of the oils would not harden or form any crystals. At 35F most are firm enough that they cannot be poured but are as soft as butter at room temperature. As the temperature is lowered, more components of the oil solidify. At 10F the oil is hard enough that a fork cannot penetrate it.Winterization is the commercial process whereby these waxes are removed to keep some oils clearer when stored on a cold shelf. It is used mostly for aesthetics and to improve mixing when combined into mayonnaise, sauces, and dressings.Olive oil is a natural product that varies from year to year even from the same producer, so each batch of oil will "freeze" at a different temperature. Freezing olive oil will not harm it; it will actually prolong its nutritional benefits and its flavor. It is a myth that the freezing point of olive oil can be used to predict whether it is pure, virgin or extra virgin. To learn more about this subject, read our Freezing Olive Oil page.pHpH refers to the hydrogen ion concentration in an aqueous solution. Olive oil and other oils are not water soluble so their acidity cannot be measured in terms of pH.OTHER INFORMATION Please enable Javascript in order to use PubChem website. Olive oil is one of the oldest, most celebrated foods on the planet. In fact, this culinary staple has been consumed for thousands of years. Way back in the day, olive oil was made by crushing olives in many ways, most often with stones mills of various types. Today, the process has definitely been modernized in several ways, but for the highest quality, most flavorful olive oils (think: extra virgin), its still fundamentally the sameolives are cleaned and then crushed in a mechanical mill, without the use of heat or chemicals, and the oil is separated from solids and water (albeit nowadays using a centrifuge).This mechanical process preserves many of olive oils health benefits:Olive oil is absolutely packed with a variety of polyphenol compounds, which have antioxidant properties.Thanks to its polyphenols and healthy fats, olive oil has been associated with reduced inflammation, improved heart, brain, and gut health, and more.It primarily consists of healthy monounsaturated fats, including anti-inflammatory oleic acid. It even has a small percentage of omega-3s.Olive oil contains phytosterols, which are bioactive compounds associated with reduced cholesterol and even certain types of cancer. Olive oil differs from other popular oils such as canola oil, vegetable oil, and soybean oil in a few key ways. For one, these oils are almost always extracted and refined using very high heat and lots of chemicals, resulting in less flavor and health benefits. Plus, their fatty acid profile isnt nearly as impressive. Olive oil, on the other hand, is potent in health benefits and flavor, making it great for use in dressings, as a dipping oil, or drizzling onto finished dishes.In fact, any olive oil from the list below can be considered a healthier pick than most other cooking oils on the market.That said, not all olive oil is created equal. Different types of olive oil have different health benefits, flavors, and culinary applications. Keep reading to see which type is right for your pantry!Extra virgin olive oil (EVOO) is often considered the gold standard in terms of flavor and health benefits. Heres what makes it special:Its made only via mechanical methods (think: olives are pressed, the oil is separated from the pulp via centrifugation, and then the oil is filtered or racked to remove any remaining solids), and never exposed to chemicals or high heat.EVOO is unrefined and cold-extracted, so it maintains very high levels of bioactive compounds, including oleuropein, hydroxytyrosol, and oleocanthal, which possess anti-inflammatory, antioxidant, and anti-microbial properties.It ranges from green to gold in hue, with aromas from fresh green and grassy to ripe and fruity. Earlier harvest oils will have a bold peppery flavor, which you can actually feel in the back of your throat. EVOO can also be made in a milder (but still flavorful) style.EVOO contains modest levels of vitamin E (about 13% of your daily value per tbsp) and vitamin K (about 7% of your daily value).Like all types of olive oil, EVOO contains beneficial phytosterols and oleic acid.Regulations require that true EVOO not have any flavor defects as determined by an official taste panel.How To Use ItTo preserve the most nutrients and showcase its bold flavor, try using extra virgin olive oil in one of these ways:Salad dressingsDipping oilFinishing oilSome people even take a spoonful straight every morning for the health perks!Fun fact: Contrary to popular belief, EVOO has a surprisingly high smoke point of (350 to 410 F), so these cooking styles are a-okay (just skip the deep frying!):Virgin Olive OilNot to be confused with extra virgin olive oil, virgin olive oil is actually pretty rare and hard to findyou often wont see it at your local grocery store. It's quite similar to EVOO, with a few minor differences:Virgin olive oil is still mechanically extracted (meaning, without chemicals or heat), so it contains many of the same health benefits as EVOO, including high levels of polyphenol antioxidants.Compared to EVOO, virgin olive oil is allowed to have some minor flavor defects, which may not even be noticeable to an untrained taster. Virgin olive oils range in flavor and aroma, with some varieties being even more robust than certain EVOOs.Like all types of olive oil, virgin olive oil contains beneficial phytosterols and oleic acid, and modest amounts of vitamin E and vitamin K.How To Use ItIf you can actually find it, you can use virgin olive oil in all the ways youd use extra virgin olive oil but it is best suited to uses where the minor defects will not be noticedmarinades, sauting, roasting, light frying, baking. Pure Olive Oil or Regular Olive Oil Along with extra virgin olive oil, pure/regular olive oil (sometimes simply labeled olive oil) is another common variety youll find in grocery stores or online. Heres what makes it different:Pure/regular olive oil is a combination of refined olive oil and 15%-25% virgin olive oil. The refined oil component is treated with some heat and chemicals to remove flavor defects.Because the refining process does reduce levels of certain compounds, pure/regular olive oil has fewer health-boosting bioactive compounds than EVOO or virgin olive oil.These oils are noticeably lighter in color than EVOO, and have a much more neutral flavor and aroma. Pure/regular olive oil is still a good source of beneficial phytosterols and oleic acid, and contains modest amounts of vitamin E and vitamin K.How To Use ItMany chefs consider pure olive oil a good general purpose cooking oil, since it has a higher smoke point than EVOO (around 470 F), mild flavor, and holds up well to high-heat cooking. Here are some good ways to use it:SautingRoastingBakingSearingGrillingFryingInfused oils (warm some olive oil with dried herbs or chilis to create your own flavored oil) Regular olive oil also has some uses beyond the kitchen! Smooth it directly onto your skin, or scrub it into your scalp for an extra dose of moisture.Along with extra virgin olive oil and pure olive oil, the other type of olive oil youre likely to see in grocery stores is light olive oil.Light and extra light olive oils are a combination of refined olive oil and 5%-10% virgin olive oil. The refined oil component is treated with some heat and chemicals to remove flavor defects.Because these oils have an even lower percentage of virgin olive oil than regular olive oil, their health benefits are proportionally reduced. Dont confuse light for low in caloriesin this case, light refers to the oils almost completely neutral flavor and aroma.Light and extra light olive oils are still a good source of beneficial phytosterols and oleic acid, and contain modest amounts of vitamin E and vitamin KHow To Use ItBecause of its high smoke point (around 470 F), light olive oil is less likely to break down under very high temperaturesso its a decent option for high heat cooking methods.SautingRoastingSearingGrillingFryingBaking (only in recipes where you dont want that classic olive oil flavor)Due to its relative lack of taste, you may not want to bother using light olive oil as a dipping or finishing oil. Its too bland to impart much flavor of its own. The wide world of olive oil can be confusing. But essentially, there are three main types of olive oil youll find in grocery stores or online retailers: extra virgin olive oil, pure or regular olive oil, and light and extra light olive oil.These olive oil types have different methods of production, and thus, different health benefits and flavor profilesgiving them each unique culinary uses. Our top pick? Well, well always be partial to a good EVOO, but keeping one of these other types in your pantryparticularly for high heat cookingisnt a bad idea either.Product placementPJ KABOS 'Family Reserve Organic - Medium'High Phenolic and 2022 Gold-Award Winner.Declared as 'One of the World's Best Olive Oils'.Click here to shop. Liquid fat made from olivesFor the Popeye character, see Olive Oyl.Olive oilExtra virgin olive oil presented with green and black preserved table olivesFat compositionSaturated fatsTotal saturatedPalmitic acid: 13.0%Stearic acid: 1.5%Unsaturated fatsTotal unsaturated> 85%MonounsaturatedOleic acid: 70.0%Palmitoleic acid: 0.33.5%PolyunsaturatedLinoleic acid: 15.0%-Linolenic acid: 0.5%PropertiesFood energy per 100g (3.5oz)3,700kJ (880kcal)Melting point6.0C (21.2F)Boiling point299C (570F)Smoke point190215C (374419F) (extra virgin)[1] 215C (419F) (virgin)[2]210C (410F) (refined)Solidity at 20C (68F)LiquidSpecific gravity at 20C (68F)0.911[3]Viscosity at 20C (68F)84cPRefractive index1.46771.4705 (virgin and refined)1.46801.4707 (pomace)Iodine value7594 (virgin and refined)7592 (pomace)Acid valuemaximum: 6.6%[inconsistent](refined and pomace)0.8% (extra virgin)Saponification value184196 (virgin and refined)182193 (pomace)Peroxide value20 (virgin)10 (refined and pomace)This article contains special characters. Without proper rendering support, you may see question marks, boxes, or other symbols.Olive oil is a vegetable oil obtained by pressing whole olives (the fruit of Olea europaea, a traditional tree crop of the Mediterranean Basin) and extracting the oil.It is commonly used in cooking for frying foods, as a condiment, or as a salad dressing. It can also be found in some cosmetics, pharmaceuticals, soaps, and fuels for traditional oil lamps. It also has additional uses in some religions. The olive is one of three core food plants in Mediterranean cuisine, with wheat and grapes. Olive trees have been cultivated around the Mediterranean since the 8th millennium BC.In 2022, Spain was the world's largest producer, manufacturing 24% of the world's total. Other large producers were Italy, Greece, and Turkey, collectively accounting for 59% of the global market.[4]The composition of olive oil varies with the cultivar, altitude, time of harvest, and extraction process. It consists mainly of oleic acid (up to 83%), with smaller amounts of other fatty acids including linoleic acid (up to 21%) and palmitic acid (up to 20%). Extra virgin olive oil (EVOO) is required to have no more than 0.8% free acidity, and is considered to have favorable flavor characteristics.Olive oil has long been a common ingredient in Mediterranean cuisine, including ancient Greek and Roman cuisine. Wild olives, which originated in Asia Minor, were collected by Neolithic people as early as the 8th millennium BC.[5][6] Besides food, olive oil has been used for religious rituals, medicines, as a fuel in oil lamps, soap-making, and skincare application.[citation needed] The Spartans and other Greeks used oil to rub themselves while exercising in the gymnasia. From its beginnings early in the 7th century BC, the cosmetic use of olive oil quickly spread to all of the Hellenic city-states, together with athletes training in the nude, and lasted close to a thousand years despite its great expense.[7][8] Olive oil was also popular as a form of birth control; Aristotle in his History of Animals recommends applying a mixture of olive oil combined with either oil of cedar, ointment of lead, or ointment of frankincense to the cervix to prevent pregnancy.[9]Ancient Greek olive oil production workshop in Klazomenai, Ionia (modern Turkey)The exact date and location of olive tree domestication are unclear. The modern olive tree may have originated in ancient Persia and Mesopotamia and spread to the Levant and later to North Africa, though some scholars argue for an Egyptian origin.[10]The olive tree reached Greece, Carthage and Libya sometime in the 28th century BC, having been spread westward by the Phoenicians.[10] Until around 1500 BC, eastern coastal areas of the Mediterranean were most heavily cultivated.[citation needed] Evidence also suggests that olives were being grown in Crete as long ago as 2500 BC. The earliest surviving olive oil amphorae date to 3500 BC (Early Minoan times), though the production of olive oil is assumed to have started before 4000 BC.[11] Olive trees were certainly cultivated by the Late Minoan period (1500 BC) in Crete, and perhaps as early as the Early Minoan.[12] The cultivation of olive trees in Crete became particularly intense in the post-palatial period and played an important role in the island's economy, as it did across the Mediterranean.[13] Later, as Greek colonies were established in other parts of the Mediterranean, olive farming was introduced to places like Spain and continued to spread throughout the Roman Empire.[10]Olive trees were introduced to the Americas in the 16th century, when cultivation began in areas with a climate similar to the Mediterranean, such as Chile, Argentina, and California.[10]Recent genetic studies suggest that species used by modern cultivators descend from multiple wild populations, but detailed history of domestication is unknown.[14]Ancient oil press (Bodrum Museum of Underwater Archaeology, Bodrum, Turkey)Archaeological evidence in Galilee shows that by 6000 BC olives were being turned into olive oil[15] and in 4500 BC at a now-submerged prehistoric settlement south of Haifa.[16]Olive trees and oil production in the Eastern Mediterranean can be traced to archives of the ancient city-state Ebla (26002240 BC), which were located on the outskirts of Aleppo. Here, some dozen documents dated 2400 BC describe the lands of the king and the queen. These belonged to a library of clay tablets perfectly preserved by having been baked in the fire that destroyed the palace. A later source is the frequent mentions of oil in the Tanakh.[17]Dynastic Egyptians before 2000BC imported olive oil from Crete, Syria, and Canaan, and oil was an important item of commerce and wealth. Remains of olive oil have been found in jugs over 4,000 years old in a tomb on the island of Naxos in the Aegean Sea. Sinuhe, the Egyptian exile who lived in northern Canaan c.1960BC, wrote of abundant olive trees.[18] The Minoans used olive oil in religious ceremonies. The oil became a principal product of the Minoan civilization, where it is thought to have represented wealth.[19]Olive oil was also a major export of Mycenaean Greece (c. 14501150 BC).[20][10] Scholars believe the oil was made by a process where olives were placed in woven mats and squeezed. The oil was collected in vats. This process was known from the Bronze Age, was used by the Egyptians, and continued to be used through the Hellenistic period.[10]Olive crusher (trapetum) in Pompeii (79 AD)The importance of olive oil as a commercial commodity increased after the Roman conquest of Egypt, Greece, and Asia Minor, which led to more trade along the Mediterranean. Olive trees were planted throughout the entire Mediterranean basin during the evolution of the Roman Republic and Empire. According to the historian Pliny the Elder, Italy had "excellent olive oil at reasonable prices" by the 1st century AD"the best in the Mediterranean".[citation needed] As olive production expanded in the 5th century AD the Romans began to employ more sophisticated production techniques such as the olive press and trapetum (pictured left).[10] Many ancient presses still exist in the Eastern Mediterranean region, and some dating to the Roman period are still used today.[21] Productivity was greatly improved by Joseph Graham's development of the hydraulic pressing system in 1795.[10]The Manufacture of Oil, 16th-century engraving by Jost AmmanThe olive tree has historically been a symbol of peace between nations. It has played a religious and social role in Greek mythology, especially concerning the city of Athens, named after the goddess Athena because her gift of an olive tree was held to be more precious than rival Poseidon's gift of a salt spring.[10]Main article: List of olive cultivarsThere are many olive cultivars, each with a particular flavor, texture, and shelf life that make them more or less suitable for different applications, such as direct human consumption on bread or in salads, indirect consumption in domestic cooking or catering, or industrial uses such as animal feed or engineering applications.[22] During the stages of maturity, olive fruit changes color from green to violet, and then black. Olive oil taste characteristics depend on the stage of ripeness at which olive fruits are collected.[22]Vinegar and olive oilOlive oil served with breadOlive oil is an important cooking oil in countries surrounding the Mediterranean, and it forms one of the three staple food plants of Mediterranean cuisine, the other two being wheat (as in pasta, bread, and couscous), and the grape, used as a dessert fruit and for wine.[23]Extra virgin olive oil is mostly used raw as a condiment and as an ingredient in salad dressings. If uncompromised by heat, the flavor is stronger. It can also be used for sauting.When extra virgin olive oil is heated above 210216C (410421F), depending on its free fatty acid content, the unrefined particles within the oil are burned. This leads to a deteriorated taste. Refined olive oils are suited for deep frying because of the higher smoke point and milder flavour.[24] Extra virgin oils have a smoke point around 180215C (356419F),[1] with higher-quality oils having a higher smoke point,[25] whereas refined light olive oil has a smoke point up to 230C (446F).[1] That they can be used for deep frying is contrary to the common misconception that there are no olive oils with a smoke point as high as many other vegetable oils. In the misconception, heating at these high temperatures is theorised to impact taste or nutrition.[26][27]The Roman Catholic, Eastern Orthodox and Anglican churches use olive oil for the oil of catechumens (used to bless and strengthen those preparing for baptism) and oil of the sick (used to confer the Sacrament of anointing of the sick or extreme unction). Olive oil mixed with a perfuming agent such as balsam is consecrated by bishops as sacred chrism, which is used to confer the sacrament of confirmation (as a symbol of the strengthening of the Holy Spirit), in the rites of baptism and the ordination of priests and bishops, in the consecration of altars and churches, and, traditionally, in the anointing of monarchs at their coronation.Eastern Orthodox Christians still use oil lamps in their churches, home prayer corners, and cemeteries. A vigil lamp consists of a votive glass filled with olive oil, floating on a half-inch of water. The glass has a metal holder that hangs from a bracket on the wall or sits on a table. A cork float with a lit wick floats on the oil. To douse the flame, the float is carefully pressed down into the oil. Makeshift oil lamps can easily be made by soaking a cotton ball in olive oil and forming it into a peak. The peak is lit and then burns until all the oil is consumed, whereupon the rest of the cotton burns out. Olive oil is a usual offering to churches and cemeteries.The Church of Jesus Christ of Latter-day Saints uses virgin olive oil that the priesthood has blessed for anointing the sick.[28]In Jewish observance, olive oil was the only fuel allowed to be used in the seven-branched menorah in the Mishkan service during the Exodus of the Tribes of Israel from Egypt, and later in the permanent Temple in Jerusalem. It was obtained by using only the first drop from a squeezed olive and consecrated for use only in the Temple by the priests and stored in special containers. In modern times, although candles can be used to light the menorah at Hanukkah, oil containers are preferred to imitate the original menorah.[29]In Judaism of Ancient Israel, olive oil was also used to prepare the holy anointing oil used for priests, kings, prophets, and others.[30]Olive oil is also a natural and safe lubricant, and can be used to lubricate kitchen machinery (grinders, blenders, cookware, etc.). It can also be used for illumination (oil lamps) or as the base for soaps and detergents.[31] Some cosmetics also use olive oil as their base,[32] and it can be used as a substitute for machine oil.[33][34][35] Olive oil has also been used as both solvent and ligand in the synthesis of cadmium selenide quantum dots.[36]The Ranieri Filo della Torre is an international literary prize for writings about extra virgin olive oil. It yearly honors poetry, fiction, and non-fiction about extra virgin olive oil.Main article: Olive oil extractionThis section needs additional citations for verification. Please help improve this article by adding citations to reliable sources in this section. Unsourced material may be challenged and removed. (June 2016) (Learn how and when to remove this message)A cold press olive oil machine in IsraelOlive oil millOlive oil is produced by grinding olives and extracting the oil by mechanical or chemical means. Green olives usually produce more bitter oil, and overripe olives can produce oil with fermentation defects, so for good olive oil, care is taken to ensure the olives are perfectly ripe. The process is generally as follows:The olives are ground into paste using large millstones (traditional method), hammer, blade, or disk mill (modern method).If ground with millstones, the olive paste generally stays under the stones for 30 to 40 minutes. A shorter grinding process may result in a more raw paste that produces less oil and has a less ripe taste; a longer process may increase oxidation of the paste and reduce the flavor. After grinding, the olive paste is spread on fiber disks, which are stacked on top of each other in a column, then placed into the press. Pressure is then applied to the column to separate the vegetal liquid from the paste. This liquid still contains a significant amount of water. Traditionally, the oil was shed from the water by gravity (oil is less dense than water). This very slow separation process has been replaced by centrifugation, which is much faster and more thorough. The centrifuges have one exit for the (heavier) watery part and one for the oil. Olive oil should not contain significant traces of vegetal water, as this accelerates the process of organic degeneration by microorganisms. The separation in smaller oil mills is not always perfect; thus, a small watery deposit containing organic particles can be found at the bottom of oil bottles.Modern grinders reduce the olives to paste in seconds. After grinding, the paste is stirred slowly for another 20 to 30 minutes in a particular container (malaxation), where the microscopic oil drops aggregate into larger drops, facilitating the mechanical extraction. The paste is then pressed by centrifugation/ the water is thereafter separated from the oil in a second centrifugation as described before.The oil produced by only physical (mechanical) means as described above is called virgin oil.[37] Extra virgin olive oil is virgin olive oil that satisfies specific high chemical and organoleptic criteria (low free acidity, no or very little organoleptic defects). A higher grade extra virgin olive oil is mostly dependent on favourable weather conditions; a drought during the flowering phase, for example, can result in a lower quality (virgin) oil. Olive trees produce well every couple of years, so greater harvests occur in alternate years (the year in between is when the tree yields less). However, the quality is still dependent on the weather.Sometimes the produced oil will be filtered to eliminate remaining solid particles that may reduce the shelf life of the product. Labels may indicate the fact that the oil has not been filtered, suggesting a different taste. Fresh unfiltered olive oil usually has a slightly cloudy appearance, and is therefore sometimes called cloudy olive oil. This form of olive oil used to be popular only among small-scale producers but is now becoming "trendy", in line with consumers' demand for products perceived to be less processed. But generally, if not tasted or consumed soon after production, filtered olive oil should be preferred: "Some producers maintain that extra-virgin olive oils do not need filtration but also that filtration is detrimental to oil quality. This point of view should be considered erroneous and probably the result of the improper implementation of this operation. In fact, fine particles that are suspended in a virgin olive oil, even after the most effective centrifugal finishing, contain water and enzymes that may impair oil stability and ruin its sensory profile.... Filtration makes an extra-virgin olive oil more stable and also more attractive. If the suspended particles are not removed, they slowly agglomerate and flocculate, forming a deposit on the bottom of the storage containers. Such a deposit continues to be at risk of enzymatic spoilage and, in the worst case, of the development of anaerobic micro-organisms with further spoilage and hygienic risk.... It is... recommended that filtration be carried out as soon as possible after centrifugal separation and finishing."[38]In the ancient Levant, three methods were used to produce different grades of olive oil.[39] The finest oil was produced from fully developed and ripe olives harvested solely from the apex of the tree,[40] and lightly pressed, "for what flows from light pressure is very sweet and very thin".[41] The remaining olives are pressed with a heavier weight,[41] and vary in ripeness.[40] Inferior oil is produced from unripe olives that are stored for extended periods until they grow soft or begin to shrivel to become more fit for grinding.[42] Others are left for extended periods in pits in the ground to induce sweating and decay before they are ground.[43] According to the Geoponica, salt and a little nitre are added when oil is stored.[41]In countries of the levant, a sharp-tasting green oil was sometimes extracted from unripe olives, known in medieval times as anpeqinon[verification needed] (Ancient Greek: , ; Arabic:), being a corruption of the Latin words oleum omphacium and used in cuisine and in medicine.[44][45][46] Today, this oil is called "virgin oil" in English.[44]The remaining semi-solid waste, called pomace, retains a small quantity (about 510%) of oil that cannot be extracted by further pressing, but only with chemical solvents. This is done in specialized chemical plants, not in the oil mills. The resulting oil is named pomace oil.[47]Handling of olive waste is an environmental challenge because the wastewater, which amounts to millions of tons (billions of liters) annually in the European Union, has low biodegradability, is toxic to plants, and cannot be processed through conventional water treatment systems.[47] Traditionally, olive pomace would be used as compost or developed as a possible biofuel, although these uses introduce concern due to chemicals present in the pomace.[47] A process called "valorization" of olive pomace is under research and development, consisting of additional processing to obtain value-added byproducts, such as animal feed, food additives for human products, and phenolic and fatty acid extracts for potential human use.[47]Olive oil production2022, tonnesSpain665,709Italy331,038Greece313,300Turkey302,400Tunisia235,200Syria189,423Morocco181,500Portugal137,753World2,743,216Source: FAOSTAT of the United Nations[4]In 2022, world production of olive oil was 2.7 million tonnes, led by Spain with 24% of the total (table). Other major producers were Italy, Greece, and Turkey (table). Villacarrillo, Jan, Andaluca, Spain, is a center of olive oil production. Spain's olive oil production derives 75% from the region of Andaluca, particularly within Jan province which produces 70% of the olive oil in Spain.[48] The world's largest olive oil mill (almazara, in Spanish), capable of processing 2,500 tonnes of olives per day, is in the town of Villacarrillo, Jan.[48] Italian major producers are the regions of Calabria and, above all, Apulia. Many PDO and PGI extra-virgin olive oils are produced in these regions. Extra-virgin olive oil is also produced in Tuscany,[49] in cities including Lucca, Florence, and Siena, which are also included in the association of Citt dell'Olio.[50] Italy imports about 65% of Spanish olive oil exports.[51]Greece has the highest per capita consumption of olive oil worldwide, around 24liters per year.[52] Consumption in Spain is 15liters; Italy 13liters;[52] and Israel, around 3liters.[53] Canada consumes 1.5liters and the US 1liter.[52]Main article: Olive oil regulation and adulterationThe International Olive Council (IOC) is an intergovernmental organisation of states that produce olives or products derived from olives, such as olive oil. The IOC officially governs 95% of international production and influences the rest. The EU regulates the use of different protected designation of origin labels for olive oils.[54]The United States is not a member of the IOC and is not subject to its authority, but on October 25, 2010, the U.S. Department of Agriculture adopted new voluntary olive oil grading standards that closely parallel those of the IOC, with some adjustments for the characteristics of olives grown in the U.S.[55] U.S. Customs regulations on "country of origin" state that if a non-origin nation is shown on the label, then the real origin must be shown on the same side of the label in letters of comparable size, so as not to mislead the consumer.[56][57] Yet most major U.S. brands continue to put "imported from Italy" on the front label in large letters and other origins on the back in very small print.[58] "In fact, olive oil labeled 'Italian' often comes from Turkey, Tunisia, Morocco, Spain, and Greece."[59] This makes it unclear what percentage of the olive oil is really of Italian origin.A bottle of Italian olive oilAll production begins by crushing or pressing the olive fruit to transform it into olive paste. This paste is malaxed (slowly churned or mixed) to allow the microscopic oil droplets to agglomerate. The oil is then separated from the watery matter and fruit pulp with the use of a press (traditional method) or centrifugation (modern method). The residue that remains after pressing or centrifugation can also produce a small amount of oil, called pomace.One parameter used to characterise an oil is its acidity.[60] In this context, "acidity" is not chemical acidity in the sense of pH, but the percent (measured by weight) of free oleic acid. Olive oil acidity is a measure of the hydrolysis of the oil's triglycerides: as the oil degrades and becomes oxidized, more fatty acids are freed from the glycerides, increasing the level of free acidity and thereby increasing hydrolytic rancidity.[61] Rancidity not only impacts the taste and color but also its nutritional value.[62]Another measure of the oil's chemical degradation is the peroxide value,[63] which measures the degree to which the oil is oxidized by free radicals, leading to oxidative rancidity. Phenolic acids present in olive oil also add acidic sensory properties to aroma and flavor.[64]The grades of oil extracted from the olive fruit can be classified as:Virgin means the oil was produced by the use of mechanical means only, with no chemical treatment. The term virgin oil with reference to production method includes all grades of virgin olive oil, including extra virgin, virgin, ordinary virgin and Lampante virgin olive oil products, depending on quality (see below).Lampante virgin oil is olive oil extracted by virgin (mechanical) methods but not suitable for human consumption without further refining; "lampante" is the attributive form of "lampa", the Italian word for "lamp", referring to the use of such oil in oil lamps. Lampante virgin oil can be used for industrial purposes, or refined (see below) to make it edible.[65]Refined olive oil is olive oil obtained from any grade of virgin olive oil by refining methods that do not lead to alterations in the initial glyceridic structure. The refining process removes color, odor, and flavour from the olive oil, and leaves behind a very pure form of olive oil that is tasteless, colorless, odorless, and extremely low in free fatty acids. Olive oils sold as the grades extra virgin olive oil and virgin olive oil therefore cannot contain any refined oil.[65]Crude olive pomace oil is the oil obtained by treating olive pomace (the leftover paste after the pressing of olives for virgin olive oils) with solvents or other physical treatments, to the exclusion of oils obtained by re-esterification processes and of any mixture with other kinds of oils. It is then further refined into refined olive pomace oil and once re-blended with virgin olive oils for taste, is then known as olive pomace oil.[65]Italian label for "extra vergine" oilIn countries that adhere to the standards of the International Olive Council,[66] as well as in Australia, and under the voluntary United States Department of Agriculture labeling standards in the United States:Extra virgin olive oil is the highest grade of virgin olive oil derived by cold mechanical extraction without use of solvents or refining methods.[65][67] It contains no more than 0.8% free acidity, and is judged to have a superior taste, having some fruitiness and no defined sensory defects.[68] Extra virgin olive oil accounts for less than 10% of oil in many producing countries; the percentage is far higher in some Mediterranean countries.The International Olive Council requires the median of the fruity attribute to be higher than zero for a given olive oil in order to meet the criteria of extra virgin olive oil classification.Virgin olive oil is a lesser grade of virgin oil, with free acidity of up to 2.0%, and is judged to have a good taste, but may include some sensory defects.Refined olive oil is virgin oil refined using charcoal and other chemical and physical filters, methods which do not alter the glyceridic structure. It has a free acidity, expressed as oleic acid, of not more than 0.3grams per 100grams (0.3%), and its other characteristics correspond to those fixed for this category in this standard. It is obtained by refining virgin oils to eliminate high acidity or organoleptic defects. Oils labeled as pure olive oil or olive oil are primarily refined olive oil, with a small addition of virgin oil for taste.Olive pomace oil is refined pomace olive oil, often blended with some virgin oil. It is fit for consumption, but may not be described simply as olive oil. It has a more neutral flavor than pure or virgin olive oil, making it less desirable to users concerned with flavor; however, it has the same fat composition as regular olive oil, giving it the same health benefits. It also has a high smoke point, and consequently is widely used in restaurants and home cooking in some countries.The United States is not a member of the IOC and does not implement its grades, but on October 25, 2010, the United States Department of Agriculture (USDA) established Standards for Grades of Olive Oil and Olive-Pomace Oil which closely parallel the IOC standards:[69][70]U.S. extra virgin olive oil for oil with excellent flavor and odor and free fatty acid content of not more than 0.8g per 100g (0.8%);U.S. virgin olive oil for oil with reasonably good flavor and odor and free fatty acid content of not more than 2g per 100g (2%);U.S. virgin olive oil Not Fit For Human Consumption Without Further Processing is a virgin (mechanically-extracted) olive oil of poor flavor and odor, equivalent to the IOC's lampante oil;U.S. olive oil is a mixture of virgin and refined oils;U.S. refined olive oil is an oil made from refined oils with some restrictions on the processing.These grades are voluntary. Certification is available, for a fee, from the USDA.[70]In 2014, California adopted a set of olive oil standards for olive oil made from California-grown olives. The California Department of Food and Agriculture Grade and Labeling Standards for Olive Oil, Refined-Olive Oil, and Olive-Pomace Oil are mandatory for producers of more than 5,000 gallons of California olive oil. This joins other official state, federal, and international olive oil standards.[71]Several olive producer associations, such as the North American Olive Oil Association and the California Olive Oil Council, also offer grading and certification within the United States.[72][73] Oleologist Nicholas Coleman suggests that the California Olive Oil Council certification is the most stringent of the voluntary grading schemes in the United States.[74]Country of origin can be established by one or two-letter country codes printed on the bottle or label. Country codes include I=Italy, GR=Greece, E=Spain, TU=Tunisia, MA=Morocco, CL=Chile, AG=Argentina, AU=Australia.Different names for olive oil indicate the degree of processing the oil has undergone as well as the quality of the oil. Extra virgin olive oil is the highest grade available, followed by virgin olive oil. The word "virgin" indicates that the olives have been pressed to extract the oil; no heat or chemicals have been used during the extraction process, and the oil is pure and unrefined. Virgin olive oils contain the highest levels of polyphenols, antioxidants that have been linked with better health.[75]Olive Oil, which is sometimes denoted as being "Made from refined and virgin olive oils" is a blend of refined olive oil with a virgin grade of olive oil.[65] Pure, Classic, Light and Extra-Light are terms introduced by manufacturers in countries that are non-traditional consumers of olive oil for these products to indicate both their composition of being only 100% olive oil, and also the varying strength of taste to consumers. Contrary to a common consumer belief, they do not have fewer calories than extra virgin oil, as implied by the names.[76]Cold pressed or Cold extraction means "that the oil was not heated over a certain temperature (usually 27C (80F)) during processing, thus retaining more nutrients and undergoing less degradation".[77] The difference between Cold Extraction and Cold Pressed is regulated in Europe, where the use of a centrifuge, the modern method of extraction for large quantities, must be labelled as Cold Extracted, while only a physically pressed olive oil may be labelled as Cold Pressed. In many parts of the world, such as Australia, producers using centrifugal extraction still label their products as Cold Pressed.First cold pressed means "that the fruit of the olive was crushed exactly one time i.e., the first press. The cold refers to the temperature range of the fruit at the time it is crushed".[78] In Calabria (Italy) the olives are collected in October. In regions like Tuscany or Liguria, the olives collected in November and ground, often at night, are too cold to be processed efficiently without heating. The paste is regularly heated above the environmental temperatures, which may be as low as 1015C, to extract the oil efficiently with only physical means. Olives pressed in warm regions like Southern Italy or Northern Africa may be pressed at significantly higher temperatures, although not heated. While it is important that the pressing temperatures be as low as possible (generally below 25C) there is no international reliable definition of "cold pressed".Furthermore, there is no "second" press of virgin oil, so the term "first press" means only that the oil was produced in a press vs. other possible methods.Protected designation of origin (PDO) and protected geographical indication (PGI) refer to olive oils with "exceptional properties and quality derived from their place of origin as well as from the way of their production".[79]The label may indicate that the oil was bottled or packed in a stated country. This does not necessarily mean that the oil was produced there. The origin of the oil may sometimes be marked elsewhere on the label; it may be a mixture of oils from multiple countries.[58]The U.S. Food and Drug Administration permitted a claim on olive oil labels stating: "Limited and not conclusive scientific evidence suggests that eating about two tablespoons (23g) of olive oil daily may reduce the risk of coronary heart disease."[80]There have been allegations, particularly in Italy and Spain, that regulation can be sometimes lax and corrupt.[81] Major shippers are claimed to routinely adulterate olive oil so that only about 40% of olive oil sold as "extra virgin" in Italy actually meets the specification.[82] In some cases, colza oil (extracted from rapeseed) with added color and flavor has been labeled and sold as olive oil.[83] This extensive fraud prompted the Italian government to mandate a new labeling law in 2007 for companies selling olive oil, under which every bottle of Italian olive oil would have to declare the farm and press on which it was produced, as well as display a precise breakdown of the oils used, for blended oils.[84] In February 2008, however, EU officials took issue with the new law, stating that under EU rules such labeling should be voluntary rather than compulsory.[83] Under EU rules, olive oil may be sold as Italian even if it only contains a small amount of Italian oil.[84]Extra-virgin olive oil has strict requirements and is checked for "sensory defects" that include: rancid, fusty, musty, winey (vinegary), and muddy sediment. These defects can occur for different reasons. The most common are:Raw material (olives) infected or batteredInadequate harvest, with contact between the olives and soil[85]In March 2008, 400 Italian police officers conducted Operation Golden Oil, arresting 23 people and confiscating 85 farms after an investigation revealed a large-scale scheme to relabel oils from other Mediterranean nations as Italian.[86] In April 2008, another operation impounded seven olive oil plants and arrested 40 people in nine provinces of northern and southern Italy for adding chlorophyll to sunflower and soybean oil and selling it as extra virgin olive oil, both in Italy and abroad; 25,000 liters of the fake oil were seized and prevented from being exported.[87]On March 15, 2011, the prosecutor's office in Florence, Italy, working in conjunction with the forestry department, indicted two managers and an officer of Carapelli, one of the brands of the Spanish company Grupo SOS (which recently changed its name to Deoleo). The charges involved falsified documents and food fraud. Carapelli lawyer Neri Pinucci said the company was not worried about the charges and that "the case is based on an irregularity in the documents."[88]In February 2012, Spanish authorities investigated an international olive oil fraud in which palm, avocado, sunflower, and other cheaper oils were passed off as Italian olive oil. Police said the oils were blended in an industrial biodiesel plant and adulterated in a way to hide markers that would have revealed their true nature. The oils were not toxic and posed no health risk, according to a statement by the Guardia Civil. Nineteen people were arrested following the year-long joint probe by the police and Spanish tax authorities, as part of Operation Lucerna.[89]Using tiny

print to state the origin of blended oil is used as a legal loophole by manufacturers of adulterated and mixed olive oil.[90]Journalist Tom Mueller has investigated crime and adulteration in the olive oil business, publishing the article "Slippery Business" in New Yorker magazine,[82] followed by the 2011 book Extra Virginity. On 3 January 2016 Bill Whitaker presented a program on CBS News including interviews with Mueller and with Italian authorities.[91][92] It was reported that in the previous month, 5,000 tons of adulterated olive oil had been sold in Italy, and that organised crime was heavily involvedthe term "Agrimafia" was used. The point was made by Mueller that the profit margin on adulterated olive oil was three times that on the illegal narcotic drug cocaine. He said that over 50% of olive oil sold in Italy was adulterated, as was 7580% of that sold in the US. Whitaker reported that three samples of "extra virgin olive oil" had been bought in a US supermarket and tested; two of the three samples did not meet the required standard, and one of themfrom a top-selling US brandwas exceptionally poor.In early February 2017, the Carabinieri police arrested 33 suspects in the Calabrian mafia's Piromalli 'ndrina ('Ndrangheta), which was allegedly exporting fake extra virgin olive oil to the U.S.; the product was actually inexpensive olive pomace oil fraudulently labeled.[93] Less than a year earlier, the American television program 60 Minutes had warned that "the olive oil business has been corrupted by the Mafia" and that "Agromafia" was a 16 billion dollar per year enterprise. A Carabinieri investigator interviewed on the program said that "olive oil fraud has gone on for the better part of four millennia" but today, it's particularly "easy for the bad guys to either introduce adulterated olive oils or mix in lower quality olive oils with extra-virgin olive oil".[94] Weeks later, a report by Forbes magazine stated that "it's reliably reported that 80% of the Italian olive oil on the [US] market is fraudulent" and that "a massive olive oil scandal is being uncovered in Southern Italy (Puglia, Umbria and Campania)".[95]In July 2024, the European Union reported a significant increase in olive oil fraud and mislabeling cases. The European Commission's annual report on food fraud revealed that olive oil remained one of the most frequently adulterated food products, with incidents reaching a record high.[96]The most common forms of olive oil fraud include:Mislabeling lower-grade oils as extra virgin olive oilDiluting olive oil with cheaper vegetable oilsFalsely claiming EU origin for non-EU oilsThese fraudulent practices not only deceive consumers but also undermine the reputation of legitimate producers, particularly those from traditional olive-growing regions in the Mediterranean.[96]To combat the rising fraud cases, the European Union has implemented several measures:Increased inspections and testing of olive oil shipmentsEnhanced traceability requirements for producers and distributorsStricter penalties for companies found guilty of fraudImproved cooperation between member states' food safety authoritiesThe EU has also launched a public awareness campaign to educate consumers about olive oil quality and how to identify authentic products. [96]The surge in fraud cases has led to:Higher production costs for honest producers due to increased compliance requirementsPotential market share loss for authentic extra virgin olive oil as cheaper, adulterated products flood the marketGrowing consumer skepticism about olive oil quality claimsIndustry experts emphasize the importance of supporting reputable producers and urge consumers to be more vigilant when purchasing olive oil, particularly when prices seem unusually low for claimed quality. [96]General chemical structure of food fats (triglyceride). R1, R2, and R3 are alkyl groups (approx. 20%) or alkenyl groups (approx. 80%).Olive oil is composed mainly of the mixed triglyceride esters of oleic acid, linoleic acid, palmitic acid and of other fatty acids,[97][98] along with traces of squalene (up to 0.7%) and sterols (about 0.2% phytosterol and tocosterols). The composition varies by cultivar, region, altitude, time of harvest, and extraction process.Fatty acidTypePercentage (m/m methyl esters)ref.Oleic acidMonounsaturated55 to 83%[97]Linoleic acidPolyunsaturated (omega-6)3.5 to 21%[97][98]Palmitic acidSaturated7.5 to 20%[97]Stearic acidSaturated0.5 to 5%[97]-Linolenic acidPolyunsaturated (omega-3)0 to 1.5% [97]Properties of vegetable oils[99]The nutritional values are expressed as percent (%) by mass of total fat.TypeProcessingtreatment[100]Saturatedfatty acidsMonounsaturatedfatty acidsPolyunsaturatedfatty acidsSmoke pointTotal[99]Oleicacid(9)Total[99]-Linolenicacid(3)Linoleicacid(6)6:3ratioAvocado[101]11.670.667.913.5112.512.5:1250C (482F)[102]Brazil nut[103]24.832.731.342.00.141.9419:1208C (406F)[104]Canola[105]7.463.361.828.19.118.62:1204C (400F)[106]Coconut[107]82.56.361.70.0191.6888:1175C (347F)[104]Corn[108]12.927.627.354.715858:1232C (450F)[106]Cottonseed[109]25.917.81951.915454:1216C (420F)[106]Cottonseed[110]hydrogenated93.61.50.60.20.31.5:1Flaxseed/linseed[111]9.018.41867.853130.2:1107C (225F)Grape seed[112]9.616.115.8 69.90.1069.6very high216C (421F)Hemp seed[113]7.09.09.082.022.054.02.5:1166C (330F)[114]High-oleic safflower oil[115]7.575.275.212.8012.8very high212C (414F)[104]Olive (extra virgin)[116]13.873.071.310.50.79.814:1193C (380F)[104]Palm[117]49.337.0409.30.29.145.5:1235C (455F)Palm[118]hydrogenated88.25.70Peanut[119]16.257.155.419.90.31819.661.6:1232C (450F)[106]Rice bran oil2538.438.436.62.234.4[120]15.6:1232C (450F)[121]Sesame[122]14.239.739.341.70.341.3138:1Soybean[123]15.622.822.657.77517.3:1238C (460F)[106]Soybean[124]partially hydrogenated14.943.042.537.62.634.913.4:1Sunflower[125]8.9963.462.920.70.1620.5128:1227C (440F)[106]Walnut oil[126]unrefined9.122.822.263.310.452.95:1160C (320F)[127]Olive oil contains traces of phenolics (about 0.5%), such as esters of tyrosol, hydroxytyrosol, oleocanthal and oleuropein,[64][128] which give extra virgin olive oil its bitter, pungent taste, and are also implicated in its aroma.[129] Olive oil is a source of at least 30 phenolic compounds, among which are elenolic acid, a marker for maturation of olives,[64][130] and alpha-tocopherol, one of the eight members of the Vitamin E family.[131] Oleuropein, together with other closely related compounds such as 10-hydroxyoleuropein, ligstroside and 10-hydroxyligstroside, are tyrosol esters of elenolic acid.Other phenolic constituents include flavonoids, lignans and pinoresinol.[132][133]Olive oilNutritional value per 100g (3.5oz)Energy3,700kJ (880kcal)Carbohydrates0gFat100gSaturated13.8gMonounsaturated73gPolyunsaturatedomega3omega610.5g0.8g9.8gProtein0gVitamins and mineralsVitaminsQuantity %DVVitamin E96% 14.4 mgVitamin K50% 60.2 gOther constituentsQuantityWater0 gFull Link to USDA Database entryPercentages estimated using USrecommendations for adults,[134] except for potassium, which is estimated based on expert recommendation from the National Academies.[135]Olive oil is 100% fat, containing no carbohydrates, dietary fiber, protein or water (table).In a reference amount of 100 grams (3.5oz), olive oil supplies 884 calories of food energy, and is a rich source (20% or more of the Daily Value, DV) of vitamin E (96% DV) and vitamin K (57% DV) (table). One tablespoon (13.5g) of olive oil supplies 500kJ (119kcal) of food energy and contains 13.5 g of fat, including 9.9 g of monounsaturated fat (mainly as oleic acid), 1.4 g of polyunsaturated fat (mainly as linoleic acid), and 1.9 g of saturated fat (mainly as palmitic acid).[136]Egyptian olivesSee also: Mediterranean dietIn the United States, the FDA allows producers of olive oil to place the following qualified health claim on product labels:[137][138]Limited and not conclusive scientific evidence suggests that eating about 2 tbsp. (23 g) of olive oil daily may reduce the risk of coronary heart disease due to the monounsaturated fat in olive oil. To achieve this possible benefit, olive oil is to replace a similar amount of saturated fat and not increase the overall number of calories consumed in a day.In a review by the European Food Safety Authority (EFSA) in 2011, health claims on olive oil were approved for protection by its polyphenols against oxidation of blood lipids,[139] and for maintenance of normal blood LDL-cholesterol levels by replacing saturated fats in the diet with oleic acid.[140] (See also: Commission Regulation (EU) 432/2012 of 16 May 2012).[141] Despite its approval, the EFSA has noted that a definitive cause-and-effect relationship has not been adequately established for consumption of olive oil and maintaining normal (fasting) blood concentrations of triglycerides, normal blood HDL-cholesterol concentrations, and normal blood glucose concentrations.[142]A 2014 meta-analysis concluded that increased consumption of olive oil was associated with reduced risk of all-cause mortality, cardiovascular events and stroke, while monounsaturated fatty acids of mixed animal and plant origin showed no significant effects.[143] Another meta-analysis in 2018 found high-polyphenol olive oil intake was associated with improved measures of total cholesterol, HDL cholesterol, malondialdehyde, and oxidized LDL when compared to low-polyphenol olive oils, although it recommended longer studies, and more investigation of non-Mediterranean populations.[144]Food portalAmurcaList of ancient dishes and foodsList of cuisinesList of dips^ a b c Gray, Sarah (2015). 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to death for the bombing of the Alfred P. Murrah Federal Building in April 1995, and the subsequent deaths of 168 people. On the program, McVeigh was given the opportunity to vent against the government.[66] Following the program, a federal policy called the Special Confinement Unit Media Policy was enacted prohibiting face-to-face interviews with death row inmates.[67] A federal inmate challenged the policy in Hammer v. Ashcroft, under which the U.S. Court of Appeals for the Seventh Circuit upheld the prison policy. In March 2010, the United States Supreme Court declined to hear an appeal in the case, and the policy limiting media access to death row inmates remains in place. CBS refuses to show the entire interview, and has stated no reasons.[68]In recent years, the program has been accused of promoting books, films, and interviews with celebrities who are published or promoted by sister businesses of media conglomerate Viacom (which owned CBS from 2000 to 2005 and since 2019; both companies' shares since 2000 were majority-owned by National Amusements even during their fourteen-year separation) and publisher Simon & Schuster (which remained a part of CBS Corporation after the 2005 CBS/Viacom split and continued on after its re-merger with Viacom), without disclosing the journalistic conflict-of-interest to viewers.[69]Main article: Killian documents controversyThe Killian documents controversy involved six documents critical of President George W. Bush's service in the Texas Air National Guard from 1972 to 1973. Four of these documents were presented as authentic in a 60 Minutes Wednesday broadcast aired on September 8, 2004, less than two months before the 2004 presidential election, but it was later found that CBS had failed to authenticate the documents. Subsequently, several typewriter and typography experts concluded the documents are forgeries, as have some media sources. No forensic document examiners or typography experts authenticated the documents, which may not be possible without original documents. The provider of the documents, Lt. Col. Bill Burkett, claimed to have burned the originals after faxing copies to CBS.[citation needed] The whole incident was turned into a feature-length film entitled Truth.On March 29, 2009, a segment titled "The Internet Is Infected" aired on 60 Minutes, which featured an interview with Don Jackson, a data protection professional for SecureWorks. Jackson himself declared in the program that "a part of [his] job is to know the enemy". However, during the interview, Jackson showed a photo of Finnish upper-level comprehensive school pupils and misidentified them as Russian hackers.[70] In the photo, one of the children wears a jacket with the coat of arms of Finland on it. Another one wears a cap which clearly has the logo of Karjala, a Finnish brand of beer, on it. The principal of the school in Taivalkoski confirmed that the photo was taken at the school about five years before the program was broadcast.[71]The photo's exact origins are unknown, but it is widely known in Finland, having been originally posted to the Finnish social networking site IRC-Galleria in the early 2000s. It spread all over Finnish internet communities, and even originated a couple of patriotically titled (but intentionally misspelled) mock sites.[71][72] 60 Minutes later issued a correction and on-air apology.[when?]After the 2012 Benghazi attack, 60 Minutes aired a report by correspondent Lara Logan on October 27, 2013, in which British military contractor Dylan Davies, identified by CBS under the pseudonym "Morgan Jones", described racing to the Benghazi compound several hours after the main assault was over, scaling a 12-foot wall and knocking out a lone fighter with the butt of a rifle. He also claimed to have visited a Benghazi hospital earlier that night where he saw Ambassador Christopher Stevens' body.In the days following the report, Davies' personal actions were challenged.[73] The FBI, which had interviewed Davies several times and considered him a credible source,[74] said the account Davies had given them was different from what he told 60 Minutes. Davies stood by his story,[75] but the inconsistency ultimately prompted 60 Minutes to conclude it was a mistake to include Davies in their report. The show issued a correction.[76]After the correction, a journalistic review was conducted by Al Ortiz, CBS News' executive director of standards and practices. Ortiz determined that red flags about Davies' account were missed.[77] Davies had told the program and written in his book that he told an alternative version of his actions to his employer, who he said had demanded that he stay inside his Benghazi villa as the attack unfolded. That alternative version was shared with U.S. authorities; 60 Minutes was unable to prove the story Davies had told them was true.[78]Davies' book, The Embassy House, was published two days after the 60 Minutes report, by Threshold Editions, part of the Simon and Schuster unit of CBS. It was pulled from shelves once 60 Minutes issued its correction.[79]On November 26, 2013, Logan was forced to take a leave of absence due to the errors in the Benghazi report.[78] Logan returned to work months later.[80]On December 15, 2013, 60 Minutes aired a report on the workings of the National Security Agency (NSA) that was widely criticized[81] as misleading[82] and a biased "puff piece".[83][84] Complaints included that the Agency's perspective was presented unchallenged and that privacy campaigners were not invited to present the counter-arguments to the Agency's claims.[81] These claims included NSA denials of "potentially extralegal" data collection. The story was reported by John Miller, who once worked in the office of the Director of National Intelligence.On March 30, 2014, 60 Minutes presented a story on the Tesla Model S luxury electric automobile, with Scott Pelley conducting an interview with CEO Elon Musk concerning the car brand as well as his company SpaceX. Within a day, the automotive blog site Jalopnik reported that the sounds accompanying footage of the car shown during the story were actually sounds from a traditional gasoline engine dubbed over the footage, when in reality the electric car makes no such sounds.[85] CBS released a statement explaining that the sound was the result of an audio editing error, and subsequently removed the sound from the online version of the piece. However, several news outlets, as well as Jalopnik itself, expressed doubt over the authenticity of this explanation, noting the similar scandal involving Tesla Motors and the New York Times in 2013.[86][87]After the resignation of CBS news head Les Moonves, an investigation into sexual harassment at CBS, including 60 Minutes, uncovered evidence of long-running sexual harassment issues stemming from behavior of producers Jeff Fager and Don Hewitt.[88][89]In April 2021, Sharyn Alfonsi's story in 60 Minutes on Florida Governor Ron DeSantis and the state's COVID-19 vaccine rollout faced criticism for suggesting that a donation by the supermarket chain Publix to DeSantis' re-election campaign influenced Florida's partnership with Publix stores for vaccine distribution.[90][91][92] Subsequently, Palm Beach County Mayor Dave Kerner accused 60 Minutes of reporting "intentionally false" information,[91] while Karol Markowicz of the New York Post characterized Alfonsi as coming off as a "political activist" in the segment.[93] A spokesperson for 60 Minutes defended the story for having included DeSantis' response to the accusation.[90] PolitiFact stated that by omitting DeSantis' remarks on why the state partnered with Publix to distribute vaccines, the clip could be considered to be "deceptive editing".[94]On May 16, 2021, Anderson Cooper's story in 60 Minutes on the flaws in facial recognition technology used by the police resulting in incorrect identification of people of color received backlash for denying credit to the black female researchers who pioneered the field. The segment was criticized by the Algorithmic Justice League for "deliberately excluding the groundbreaking and award-winning work of prominent black women AI researchers Joy Buolamwini, Dr. Timnit Gebru, and Inioluwa Deborah Raji".[95] The segment was called out for its hypocrisy for failing to credit black women for their pioneering work in a segment highlighting how facial recognition software often leaves out black, Asian, and female faces. CBS later issued a statement explaining that these researchers were not included due to time restrictions of the segment.[96]On December 7, 2024, Donald Trump filed a $20 billion lawsuit against CBS and its parent company, Paramount Global, alleging that the network deceptively edited an interview with Vice President Kamala Harris on 60 Minutes to sway public opinion in her favor. The lawsuit, submitted in the lead-up to the 2024 presidential election, claims that the editing distorted Harris's response regarding Middle East policy. Both parties agreed to enter mediation, coinciding with a planned $8 billion merger between Paramount and Skydance, which requires approval from the Federal Communications Commission (FCC). Within Paramount, there was reportedly internal disagreement over whether to settle the dispute, as the producers of 60 Minutes maintained their conduct was appropriate and opposed offering an apology.[97] In early April 2025, Trump expressed his "hope" that the FCC would punish CBS for running on 60 Minutes stories on Ukraine and Greenland that he disapproved of. Trump filed a lawsuit in Texas accusing CBS of violating the state's Deceptive Trade Practices Act, a consumer protection law.[98]On April 22, 2025, Bill Owens resigned as the show's executive producer, telling staff he believed he no longer had journalistic independence. He said in a memo that the show would continue to cover the second Trump administration the same way it has covered others.[99][100] Some said that if the lawsuit by Trump is settled, it would "continue a trend" of institutions giving "in to his demands to avoid punishments such as losing federal funding or access to federal buildings."[101] Others reported that while the show's staff was "shaken" by the departure of Owens, no one else was expected to resign because it "would be seen as giving in to Trump," with executive editor Tanya Simon, daughter of Bob Simon, beginning to run the show "on an interim basis," following the resignation of Owens.[102] In the "Last Minute" segment of the show on April 27, 2025,[103] Scott Pelley praised Owens for ensuring that the types of controversial stories the show had covered since its creation, most recently the Gaza war and the Trump administration, were covered fairly. However, he claimed that recent changes, namely increased supervisionbut not censorshipof the show's content by Paramount due to its desire to complete their merger, had led Owens to feel that he "lost the independence that honest journalism requires." Pelley concluded this public rebuke of the network's owner by stating that Owens proved to be the "right person" leading the show "all along."[104][105][106]The main 60 Minutes show has created a number of spin-offs over the years.Main article: 30 Minutes (TV program)30 Minutes was a news magazine aimed at children that was patterned after 60 Minutes, airing as the final program in CBS's Saturday morning lineup from 1978 to 1982. It was hosted by Christopher Glenn (who also served as the voice-over for the interstitial program In the News and was an anchor on the CBS Radio Network), along with Betsy Aaron (19781980) and Betty Ann Bowser (19801982).60 Minutes More was a spin-off that ran for one season from 1996 to 1997 on the channel CBS Eye on People. The episodes featured popular stories from the past that were expanded with updates on the original story. Each episode featured three of these segments.[107]Main article: 60 Minutes IIIn 1999, a second edition of 60 Minutes was started in the United States, titled 60 Minutes II. This edition was later renamed 60 Minutes for the fall of 2004 in an effort to sell it as a high-quality program, since some had sarcastically referred to it as 60 Minutes, Jr. CBS News president Andrew Heyward said, "the Roman numeral II created some confusion on the part of the viewers and suggested a watered-down version".[108] However, a widely known controversy that came to be known as "Rathergate", regarding a report that aired on September 8, 2004, caused another name change. The program was retitled 60 Minutes Wednesday both to differentiate itself and to avoid tarnishing the Sunday edition, as the editions were editorially independent from one another. It reverted to its original Roman numeral title on July 8, 2005, when the program moved to Fridays in an 8:00p.m. Eastern Time slot to finish its run. The show aired its final broadcast on September 2, 2005.In 2011, CNBC began airing a 60 Minutes spin-off of its own, called 60 Minutes on CNBC. Hosted by Lesley Stahl and Steve Kroft, it aired updated business-related reports seen on the original broadcasts and offers footage that was not included when the segments first aired. It ended in 2015.Main article: 60 Minutes SportsIn 2013, CBS's sister premium television network Showtime premiered 60 Minutes Sports, a monthly spin-off focused on sports-related stories and classic interviews from the show's archives. Personalities from CBS Sports also contributed to the program; correspondents included Sharyn Alfonsi and Armen Keteyian. The spin-off was considered a competitor to HBO's Real Sports. It was cancelled in January 2017.[109][110][111]In June 2020, the show launched 60 in 6 on Quibi, featuring original weekly 6-minute programs. Correspondents were Enrique Acevedo, Seth Doane, Wesley Lowery, and Laurie Segall.[112][113] It was originally set to launch in April 2020.[114] On the June 21, 2020, broadcast of 60 in 6, Doane covered the show's exposure to COVID-19 in a piece titled "CBS News Battles COVID-19".[115] The piece revealed that CBS News had flown in staffers, including from Seattle and Rome, in early March 2020 to begin filming promotional material for 60 in 6. This brought COVID-19-positive people in close contact with CBS employees; as a result, CBS Broadcast Center and several other buildings in Manhattan were temporarily closed.[116] Quibi went bankrupt in December 2020 and the program concluded with it.In March 2021, Paramount+ premiered 60 Minutes+, a weekly spin-off aimed at a younger audience. The correspondents from 60 in 6 returned for this spin-off, as well as producer Jonathan Blakely.[117] In January 2022, the show was cancelled after 30 episodes.[118]For the 60 Minutes 25th anniversary program in 1993, Charles Kuralt revisited notable stories and celebrity appearances and also interviewed Don Hewitt and correspondents, both the active and some former ones.Main article: 60 Minutes (Australian TV program)The Australian version of 60 Minutes premiered on February 11, 1979. It still airs each Sunday night at 7:30p.m. on the Nine Network and affiliates. Although Nine Network has the rights to the format, as of 2007[update], it does not have rights to stories from the American program, which is owned by competitor 10 News Australia after Network Ten's acquisition by CBS in 2017. Nevertheless, stories from the flagship 60 Minutes program in the U.S. often air on the Australian program by subleasing them from Ten. In 1981, 60 Minutes won a Logie Award for their investigation of lethal abuses at the Chelmsford psychiatric hospital in Sydney.[119][120]In the mid-1980s, an edited version (approx. 30 minutes in length) of the American broadcast edition of 60 Minutes, entitled "60 Minutes: CBS im Dritten" ("60 Minutes: CBS on Channel 3") was shown for a time on Westdeutsches Fernsehen[citation needed] (regional channels were also called "Channel 3" to distinguish it from ARD and ZDF, the two national channels at the time). This version retained the English-language track of the original but also featured German dubbing.Main article: 60 Minutes (New Zealand TV programme)The New Zealand version of 60 Minutes has aired on national television since 1989, when it was originally launched on TV3. In 1992, the rights were acquired by TVNZ, who began broadcasting it in 1993. The network aired the program for nine years before dropping it in 2002 for its own program, entitled Sunday, which is currently the highest-rated current affairs show broadcast on New Zealand television, followed by 20/20. 60 Minutes was broadcast by rival network TV3, before switching to the Sky Television owned Prime channel in 2013, when the contract changed hands.This section may be confusing or unclear to readers. Please help clarify the section. There might be a discussion about this on the talk page. (August 2023) (Learn how and when to remove this message)In 1992, the GNT channel brought its original version with dubbed subtitles from that country. And later, in 2004, Rede Bandeirantes, planned a licensed localized version, but the plan was cancelled. And even so that year, it returned as a frame, i.e. a rubric in the program Domingo Espetacular on Rede Record, a competitor of Rede Globo's program Fantstico.SIC Notcias acquired the broadcasting rights to the program in 2001. The original episodes were shown in Portugal with introductory and final comments by journalist Mrio Crespo, who conducted the program until 2014. It is presently hosted by anchors of the aforementioned network on a rotational basis, who eventually adopted the previous model.The news program of National Broadcasting of Chile (TVN), the public television network in that country, was named 60 Minutos ("60 Minutes") from 1975 to 1988, but the program had no association with the US version and no investigative reporting.[citation needed]A Mexican version, which featured Juan Ruiz Healy serving as anchor, aired in the late 1970s and 1980s.[121]A Peruvian version aired in the early 1980s, called 60 Minutos. However, in the late 1980s there was also a similarly named series, but unrelated to the series produced by CBS News.The Japanese version, CBS Document, aired from 1988 to 2010. Its primary presenter was Peter Barakan. It continued in a slightly different format, under the name CBS 60 Minutes, until 2014; Barakan hosted this version as well.Edited reruns of 60 Minutes interviews have aired on various cable channels in the United States, including TV Land and ESPN Classic.In Thailand, 60 Minutes (Thailand) was broadcast on TV 9 (from 1995 to 1997) and BBTV Channel 7 (from 1999 to 2001).In Catalonia, 60 Minutes has been broadcast by TV3 for 27 seasons.In France, M6 launched 66 minutes in 2006, a television magazine with a similar concept and format.[122]This Hour Has Seven Days, and W5 both of which pre-date 60 Minutes by a couple of years, are similar in journalistic style and formatBetty Ford's August 1975 60 Minutes interviewList of 60 Minutes episodes

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