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Extraccion de aceite esencial por arrastre de vapor pdf

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It is the most suitable process for the production of perfumes, because it is very delicate, similar to simple distillation, which differs in that the mixture is never transported at boiling point (100 degrees), instead steam is suffocating so that this transport and separate the fragrant oils. Due to its gaseous state, the steam is mixed with water-soluble substances which separate and pull the collecting vessel from distillation, which at the end of the process is filled mainly with distilled water and a small portion of essential oil which can be easily collected by decantation because it forms a separate phase of water. The result is 100% pure essential oil, which preserves the complexity of the original odor and is much more intense than the smell of the raw material itself. Essences obtained with steam drag distillation: Cardamom Neroli Patchuli Vetiver You read the free Preview pages 7 to 16 not shown in this demo. Steam trawls or steam-drawn distillation is a type of distillation of temperature-sensitive materials such as natural aromatic compounds. It was also a popular method for cleaning organic compounds, however, with the popularization of vacuum distillation, it fell into disaqui value for this application. However, steam trawls are still used in certain industries. Extraction of essential oils Essential oils is defined as the essential oil of a plant or parts thereof as volatile liquid fractions, usually obtained by distillation (can also be obtained by expression), which contain substances responsible for the smell of plants among many others, and therefore their importance in the aroma industry, although they may also contain other substances of pharmaceutical or chemical importance. Among the types of compounds that can be found in essential oil are: Low weight alpha compounds Alkans Alcohols Aldehydes Ketones Esters Monoterpenes Acids Quiterpenes Phenylpropaninsized and nitrogenous compounds The appearance of these compounds and their relative distribution depends on the source from which they are extracted, the part of the plant to be used and the physiological state of the plant tissue at the time of extraction. There are other factors, such as the variety used, the climate and the growing conditions. For this reason, it is important to have instruments that allow the rapid characterisation of the essential oils obtained. Essential oils are used in a wide range of industries, in the cosmetics industry they are used in perfumes and preparations with natural ingredients. In the food industry, they are used as flavourings, flavourings and antioxidants due to their chemical properties, which help to stop the natural oxidation process. Some compounds, after being isolated from essential oil, are used as precursors for the synthesis of others with commercial value. Steam trawl water is one of the solvents par excellence, and the first attempts to perform the extraction were made with this solvent. The first attempt to extract the essence of plants was to put them in contact with hot water, but the difficulty of separation of materials later caused new alternatives to be sought. It was later in the idea of placing plants in the top vessel so that the steam formed at the bottom passed through and then condensed into the coil, thereby emerging even more for the extraction of scents and essences. With the industrial revolution, the need to produce extracts in ever greater quantities, that artisanal methods could make these methods adapted to the industrial scale with good results. So from yet you went to the hood, where the plant material is placed and puts in contact with the steam created in the annex of the boiler or boiler, and then take that steam into the capacitor, and collected in the decanting tank, where the essential oil and water would come out separately. Scheme of mint distiller. I'm dry, 1901-13. United States of America. Office of Plant Industry, Land and Agricultural Engineering It is necessary to control the amount of steam needed to carry out mining, because if a very large amount is used, it will condense at the end of the process and can result in no physical separation of phases, making it difficult subsequently to extract essential oil. One of the methods to solve this problem is the recirculation of water to the boiler or steam generator, but if you are also interested in the corresponding hydrosol (water fraction obtained together with essential oil), it can be degraded when exposed to boiler temperatures. If a vacuum line of operation is connected to the assembly, you can perform steam extraction at lower pressures, similar to vacuum distillation, which allows water to steam at temperatures below normal boiling point under environmental conditions. It also protects thermolabile substances, which may be interesting, but in turn increases the cost of operation. Advantages of steam pull Easy assembly and operation, low cost due to the use of water instead of solvents. The amount of steam to be used in industrial operations can be easily controlled Extraction temperature will always be lower or equal to the boiling temperature of the water for living conditions. Two extraction products, essential oil and hydrosol, may be obtained, the composition of which will depend on the solubility of the compounds in water. Disadvantages of steam resistance Not all extracts can be obtained by trawling steam. If the product concerned is cheap, the capital amortisation time required for industrial assembly can be very long It is not a specific separation technique, any volatile substance is extracted within the range of operating temperature, it may include pesticides or undesirable substances it does not serve to obtain all kinds of substances (e.g. resins). Materials Glass shaker 1 straight capacitor Alargadera 2 round bottom distillation balls Slead sheets, watch glass, 3 walnut tweezers, 2 bunsen lighters, 2 tripods, U2 tube Erlenmeyer 100mL, Precipitate pack 100mL, Precipitate pack 250mL, Balanza Material remove (400g orange shells or dried almonds without albedo (inner white shell) and endocarp (porridge supporting fabric), this, to prevent the spread of mushrooms or 400 g of fresh eucalyptus leaves) * * These are the simplest materials to obtain a significant amount of essential oil, but you can also use other materials such as cinnamon in splinters, rosemary, tangerines, etc.) Procedure Fill the balloon creating steam (1) halfway through running water and install a long glass tube (this will serve as a safety seal for steam production). The sphere where extraction is carried out shall be filled with material extracted in small pieces equal to 3/4 of its height, measuring the weight of the added material. Write down this value. Carry out the steam-drawing assembly shown in the figure, taking into account the following: Beads, steam generator (1) and in which extraction is carried out (4) must be provided with asbestos or refractory mesh on a walnut or tripod ring. Steam trawl extraction scheme Be sure to connect the direct capacitor to the water system to ensure cooling, with fresh water supply at the bottom and output at the top, remember that maintain the water flow in such a way that the capacitor remains cold. At the end of the capacitor, the U-tube can be treated as a florenine tube to separate the extracted oil or to harvest it in a small Erlenmeyer and then separate it into a decanting funnel. It must be verified that the system is properly sealed to prevent volatile losses and that the condenser is cold enough to retain interesting substances. Extraction process Start by applying heat to a steam balloon (1), supplied via a gas lighter or heating blanket, if it is to be produced with iron, it is necessary to replace this ball with a flat bottom to improve energy distribution. As steam is generated on this balloon, it will be driven through glass pipe 3, heating, to the extraction balloon, remember to pay attention to the system gradually heated. If the steam does not heat up after a reasonable period of time or the steam does not reach the distillation balloon, the temperature administered by the steam balloon should be increased. To avoid excessive steam condensation in a line or in an extraction balloon, it must be isolated by means of a low thermal conductivity material. On the other hand, if the extraction balloon begins to condense water vapour and floods, another lighter can be placed for heating, making sure that the plant material does not burn. Steam emanating from the extraction balloon passes through the glass tube (5) into the condenser, where the phase changes, good condensation, handling of cooling water flow must be observed to prevent leakage of volatile compounds of interest. When extracting, the separation of the oil from the aqueous phase can be observed to determine the end point of extraction, you can observe part of the condensate in the clock glass to see if the oil is still extracted. Since no oil is observed in the condensate anymore, the U-tube is separated from the system and the lighter is switched off, so the system cools down for 10 minutes or more. After this time, the system joints are released and can cool completely. Subsequently, the extracted oil is separated either by means of a 1 ml pipette or a decanting funnel if sufficient. Measure the volume by means of a suitable apparatus (small sample, measuring pipette, etc.) and its mass. After the experiment Calculate the extraction capacity using the initial weight of the plant material to be extracted and the quantity or weight of essential oil obtained. Power may be reported in volumes by weight (ml of essential oil/kg kilograms of material extracted) or weight by weight (mg of essential oil/ kilograms of extracted material). Literature search for performance plant material used and compare it with the power obtained in the laboratory. Identify possible causes of performance change relative to theoretical or reported in the literature and how this process could be improved. Safety recommendations It is necessary to take care of hot mounting surfaces and generated water vapor. It should be constantly verified that the pressure on the steam ball does not increase uncontrollably and that there are no obstacles in the steam passage. Essential safety features should always be used in a chemical laboratory (laboratory clothes, gloves, goggles and others requiring internal, local or national standards. Waste generated by practice must be adequately disposed of in accordance with laboratory standards and relevant local and national standards. More information Steam distillation of essential oil - NMT.edu classification level: University Type: Teaching practice Risk: Medium

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