Preparation of chalcones pdf

All possible products in Experiment 4 belong to a certain class of molecules called halcons. Halcons (cal cones) are biosynthesisd by plants and have impressive biological activity, including antioxidant, antifungal, antibacterial, antitumor and anti-inflammatory properties. All chalcons have the same basic structural skeleton, which consists of unsaturated ketone, which binds two aromatic rings. Many of them can be isolated from plant material and can also be synthetically produced with the aldol condensate reaction. Neves, M.P., et al. Bioorg. Med. Chem. 2012, 20, 25 Methods used by the melting point of gravity recrystallization and vacuum filtration of the thin layer of chromatography and infrared spectroscopy Experiment 4 is a group experiment. You'll be working in a small group to develop and conduct experiments in an attempt to answer one of the focus questions below. Your goal is to form and test the hypothesis in response to a question of focus. The general procedure is below and should be appropriately adapted. Choose from the two focus questions below (see Ege 17.4 A (p. 701-705). Which are the two least reactive in the aldol condensate reaction? Which two of the following ketones are the most reactive in the Aldol condensate reaction? Which are the two least reactive in the aldol condensate reaction? Encouraged creativity. please discuss it with GSI before proceeding. Before the lab discuss your focus question with your small group and answer the questions found on the experimental sheet design group here. The sheet is also available in the resources folder on CTools. Place 1 mmol (weighing exactly) aldehyde in a conical vial equipped with magnetic sprut. Add one mole equivalent amount of ketone and 1 ml 95% ethanol to the bottle and start stirring. Add 0.10ml of 15 m sodium hydroxide solution to the bottle, cap and stir at room temperature until it hardens (CAUTION! NaOH is a strong base). Depending on how you changed the reaction conditions the reaction may take more or less time. Most chalcone products will be deposited from the solution after forming. Break with a hard spatula and dilute 2 ml of ice water. Transfer the mixture to another 3 ml of ice water in Erlenmeyer's small flask. Stir thoroughly, then suck the filter, rinse with cold water, and let the air dry before determining the raw yield. All aldol condensate products must be refined by redistlation, and most of them be redrawn from 95% ethanol. The purity of all products must be checked and m.p., and their IR spectrum is recorded. Cm. Table 4-1 for melting points data for possible Experiment 4 products. Please note that m.p. data on some products is not available in the literature. Write your answer at the end of the lab notebook page for this experiment What would you do differently if you could change the design of your experiment? Was your hypothesis correct (it's normal if it wasn't)? What results either supported or disproved your hypothesis? Table 4-1 Possible Chalcone Products for Experiment 4 Aldol Condensate R' mp (KK) H 4'-OCH3 106 H 4'-Cl 100 H 4'-Br 104-105; 113 H 4'-CH3 59-60; 77-78 4-NO2 H 165 4-NO2 4'-OCH3 167-168 4-NO2 4'-Cl 163-16 4-NO2 4'-Br 166 4-NO2 4'-CH3 162 4-CH3 H 96,5 4-CH3 4'-OCH3 ? 4-CH3 4'-Cl 165 4-CH3 4'-Br? 4-CH3 4'-CH3 127.5 4-OCH3 H 77 4-OCH3 4'-OCH3 102 4-OCH3 4'-Cl 121-122; 128 4-OCH3 4'-Br 142-143 4-OCH3 4'-CH3 94 4-Cl H 103; 113-114 4-Cl 4'-OCH3 130-131 4-Cl 4'-Cl 156-157 4-Cl 4'-Br ? 4-Cl 4'-CH3? 3,4-O-CH2-O H 122 3,4-O-CH2-O 4'-OCH3 129 3,4-O-CH2-O 4'-Cl 128 3,4-O-CH2-O 4'-br? 3.4-O-CH2-O 4'-CH3 130 For butterflies, see Chalcone (skipper). Chalcone[1] Names Preferred IUPAC name Chalcone[2] Systematic IUPAC name (2E)-1,3-Diphenylprop-2-en-1-one Other names ChalkoneBenzylideneacetophenonePhenyl styryl ketone Identifiers CAS Number 94-41-7 Y614-47-1 ((E)-Chalcone) N 3D model (JSmol) Interactive image ChEBI CHEBI:27618 Y ChemSpider 6921 Y ECHA InfoCard 100.002.119 PubChem CID 637760 CompTox Dashboard (EPA) DTXSID20873536 InChI InChI=1S/C15H12O/c16-15(14-9-5-2-6-10-14)12-11-13-7-3-1-4-8-13/h1-12H YKey: DQFBYFPFKXHELB-UHFFFAOYSA-N YInChI=1/C15H12O/c16-15(14-9-5-2-6-10-14)12-11-13-7-3-1-4-8-13/h1-12HKey: DQFBYFPFKXHELB-UHFFFAOYAP SMILES O=C(C=Cc1ccccc1)c2ccccc2 Properties Chemical formula C15H12O Molar mass 208.260 g·mol−1 Density 1.071 g/cm3 Melting point 55 to 57 °C (131 to 135 °F; 328 to 330 K) Boiling point 345 to 348 °C (653 to 658 °F; 618 to 621 K) Magnetic susceptibility (χ) -125.7·10−6 cm3/mol Except where otherwise noted , data is given for materials in their standard state (at 25 degrees Celsius, 100 kPa). N check (what is YN?) Infobox links Chalcone is an aromatic ketone and enon that forms the central nucleus for various important biological compounds that are known collectively as halcon or halconoids. Alternative names for chalcone include benzilideneatheetonone, phenyl styryl ketone, benzalatofenone, β-phenylacrylofenone, γ-oxo-α,γ-diphenyl-α-propylene, and α-phenyl-β-benzoille. The chemical properties of Chalcones have two absorption maximums of 280 nm and 340 nm. The chemical reaction Synthesis Chalcones can be prepared by condensing aldol between benzaldehyde and acetophenone in the presence of sodium hydroxide as a catalyst. This reaction can be carried out without a solvent strong reaction. The reaction between replaced benzaldehyde and acetophenone can be used as an example of green chemistry in the bachelor's degree. In the study, studying green synthesises, the chalcons were synthesized from the same starting materials in high-temperature water (200 to 350 degrees Celsius). Replaced chalcones were also synthesized through piperine condensate to avoid adverse reactions such as multiple condensations, polymerization and permutations. Other reactions included a conjugated enon reduction of tributyltin hydroid: 3.5-Disubstituted 1H-pyrazoles can be produced from appropriately replaced by halcone hydratin reaction hydrazine in the presence of elemental sulfur or sodium persulfate, or by using hydrazone in this case as an ain produced as a by-product. A specific case for the formation of 3.5-diphenyl-1H-pyrazole from the halcon itself can be presented as: Potential pharmacology of Halcones and their derivatives demonstrate a wide range of biological activities, including anti-inflammation. Some 2-amine-chalcons were studied as potential anti-tumors. [15] Терапевтический (анти-рак, антибактериальный, противогрибковый, противовирусный, противоамебический, противомалярийные, противомалярийные, противомалярийные, нематицидные, антиоксидантные, ингибиторы против различных терапевтических целей и т.д.), каталитические, химиосенсинговые и фотосенсибилизирующие потенциалы различных металлов (железо, рутений, платина, медь, цинк, кобальт, марганец, никель, осмий, хром, теллюриум, бор, тунгстен) Биологические перспективы ингибирования цели Несколько естественных и (полу) синтетических халконов показали противоопухолевая активность из-за их ингибирующего потенциала против различных целей, а именно АТФ-связывающей кассеты супер-семьи G член 2 (ABCG2), P-гликопротеин (P-gp), Белок устойчивости к раку молочной железы (BCRP), 5 -редуказы, ароматазы, 17-β-гидроксистероид дегидрогеназа, гистон деацетилаза (HDAC)/Sirtuin-1, протеасома, сосудистый эндотелиальный фактор роста (VEGF), сосудистый эндотелиальный рецептор фактора роста-2 (VEGFR-2) киназы, матричные металлопротеиназы (MMP)-2/9, Janus kinases (JAK)/Signal transducer и активатор транскрипционных белков (STAT) сигнальных путей, Цикл деления клеток-25 (CDC25B), тубулин , catepsin-K, topoisomerase-II, Wingless Integration Site (Wnt), nuclear kappa-light-chain amplifier activated B-cells (Wnt), nuclear kappa-light-chain-amplifier-activated B-cell (14) Nf-H), v-raf murine sarcoma viral oncogene omologist B1 (B-Raf), mammal target rapamycin (mTOR), and t.e. Chalcone molecules deserve praise to be potential antidiabetic candidates who act by modulating the therapeutic targets of Peroxisome spreader activated gamma receptors , Dipeptylyl peptidase-4 (DPP-4), α-glucosidease, protein-tyrosine phosphate 1B (PTP1B), aldose redukase, and tissue tissue tissue [19] Chalcones have been identified as the potential anti-infective candidates that inhibit various parasitic, malarial, bacterial, viral, and fungal targets like cruzain-1/2, trypanopain-Tb, trans-sialidase, glyceraldehyde-3-phosphate dehydrogenase (GAPDH), fumarate reductase, falcipain-1/2, β-hematin, topoisomerase-II, plasmepsin-II, lactate dehydrogenase, protein kinases (Pfmrk and PfPK5), sorbitol-induced hemolysis, recombinant dengue virus Type 1 (DEN-1 NS3), influenza A virus (H1N1), human immunodeficiency virus (HIV-Integrase/Protease), protein tyrosine phosphatase A/B (Ptp-A/B), filamentous temperature-sensitive mutant Z (FtsZ), fatty acid syntheses (FAS-II), lactate/isocitrate dehydrogenase, NorA efflux pump, deoxyribonucleic acid (DNA) gyrase, fatty acid synthase, chitin synthase, β-(1,3)-glucan synthase, etc. [20] Chalcones are the promising candidates in inhibiting various cardiovascular, hematological and anti-obesity targets like angiotensin-converting enzyme (ACE), cholesteryl ester transfer protein (CETP), diacylglycerol acyltransferase (DGAT) , акил-коэнзим А: холестерин акилтрансфераза (ACAT), липаза поджелудочной железы (PL), липопротеин липаза (LPL), кальций (Ca2)/калий (K3) канал, тромбоксан (TXA2 и TXB2) и т.д. Производные Chalcone продемонстрировали замечательную противовоспалительную активность из-за их ингибирующего потенциала против различных терапевтических целей, таких как циклооксигеназа (COX), липооксигеназа (LOX), интерлейкины (IL), простагландины (PGs), синтаза оксида азота (NOS), лейкотриен D4 (LTD4), ядерный фактор-КБ (НФБ), внутриклеточная адгезия молекулы-1 (ICAM-1), молекула адгезии сосудистой клетки-1 (VCAM-1), моноцит хемоаттракантный белок-1 (MCP-1), TLR4/MD-2, и т.д. См. также Ссылки на эпоксидирование Джулии-Колонна - индекс Мерка, 11-е издание, 2028 г. - Front Matter. Номенклатура органической химии : Рекомендации IUPAC и предпочтительные имена 2013 (Голубая книга). Кембридж: Королевское химическое общество. 2014. стр. 722. doi:10.1039/9781849733069-FP001. ISBN 978-0-85404-182-4. Песня, Донг-я; Чжун, Кён Хун; Луна, Чжи Хе; Шин, Дон Мён (2003). Фотохимия халкона и применение чалкон-производных в слое фотоустановки жидкокристаллическое отображение. 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