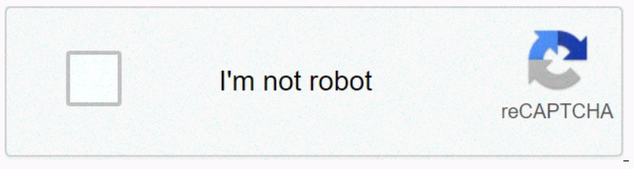

Continue

Edward mauricio echeverri pineda

Type of project: Research and development of a national system at the local level in Medelin from the Medelin Home Sports and Recreation Institute: Overview of the November period of 2018 The city of Medelin has been the scene of colombia's armed conflict, which has been exacerbated by the growth of the drug trade since the 1980s and the most visible effect has been violence by the 1990s. The city was classified as the most dangerous in the world (Historical Memory Group, 2017). Because of this situation, various strategies were designed in the 1990s to address the issue of national security and weakness in the city of Medelin. In this scenario, in 1993 the Institute of Sport and Recreation (INDER) in Medelin emerged as a response by the mayor and medelin council to social issues at the time, and with the aim of penetrating areas of violence and illegality and building social fabrics through sports and recreation. INDER is part of the decentralized sector of the municipal administrative district of medelin city and is responsible for promoting the use of sports, physical activity, recreation and free time through the offering of programs, in spaces that contribute to improving civil culture and improving the quality of life of residents of the municipality of Medelin (INDERIN?, 2018). It also builds a process of integration of sports, culture and music that is expressed in many ways to its inhabitants. Therefore, the study is intended to analyze the construction of state institutions in medeline communes from the intervention of INDER. This allows INDER to take into account the connections it connects with its citizens and create social and political stability for the city's members in order to achieve social cohesion that cancels out acts of violence. In this sense, the hypothesis of this study is that INDER has become a channeler of governance factors for institutions that manage to integrate populations into common projects coming out of cities and sports, and in turn, these integration processes manage to directly affect violent actors (e.g., medelin combos, Generate a network of institutional trusts. Inder is therefore the benchmark for the most important references for citizenship that offers a glimpse into national strengthening, governance, building social fabrics, population security projections, institutional peacebuilding and peacebuilding projectsland of the territory. Project Type: Research, development and innovation preparation and dating of liposomes to stabilize vitamin E and acai extracts in a different dispersion system Home: Ended July 2014: August 2015 period summary Also known as aaí (Oyterpe oerellasia mart) is widely distributed in the Amazon. Its fruit, known by the same name, is a purple round oval berry (red variety) when ripe and green at immature (1). Is. Studies have shown that aaí mainly contains polyphenol compounds containing anthocyanic types (2, 3, 6, 7, 8), and its dedicity by HPLC indicates the superiority of cyanidine 3 glucose, epicatechin and catechin, and has an antioxidant capacity of 48.6 omol ET/L (tronox equine/liter). Due to the high content of polyphenols with a powerful antioxidant effect, the extract of aaí is frequently used in cosmetic preparations intended for use on the skin and mucous membranes as creams, and lotions show that, despite the antioxidant capacity of anthocyanins found in the extract of aaí, some cosmetic preparations containing aaí extracts were oxidized and yellowish in the presence of light, which occurs due to the oxidation of anthocyanins present in the extract by the action of these instabilitys. The stability of anthocyanins depends on factors such as light, enzymes, pH, temperature and metals (2). It is unusual to use antioxidants to prevent the oxidation of another antioxidant, but the addition of vitamin E can reduce the oxidation received by polyphenols present in aaí extract, so in this case it will be the best option, but being another recognized antioxidant will increase this effect. The problem of polyphenol oxidation, or more specifically anthocyanins present in aaí extract, is solved by the addition of another antioxidant such as vitamin E, but vitamin E is also slightly unstable and should seek alternatives to protect against the environment, which makes liposomes an excellent option for solving the problem of instability, which makes liposomes an excellent option for solving the problem of instability and provides protection against both antioxidants against light. (1) Production, ellilisation and functional properties of new excipients co-treated from sorbitol and calcium phosphate anhydro: a final report of research by Edward Mauricio Echeverri Pineda to qualify for the title of MagisterPharmaceuticals and Food: Antioch Pharmaceutical University September 2015 (2) Overview Background: Currently, the preferred methodology for the production of solid pharmaceutical forms is essentially direct compression due to its great versatility. The implementation of this technology requires the use of high-performance multifunctional excients to efficiently improve the drug-technical behavior of active ingredients with poor mechanical properties. An excellent option is coproclicing, which includes micro-specific levels of physical interaction of compounds for the creation of high-performance excisor-type materials. Purpose: To develop multifunctional excisors by insitum aggregation of sorbitol and calcium anhydride. Method: Four co-treatment methods were evaluated: spray drying, agglomeration, co-precipitation and fusion granulation, using calcium anhydrate levels of 5-95%. The functionality of the new excisor was compared with commercially available ® excisors such as prosorb SMCC90®, Ludipress® and Seraksource 80®. The tests used were lubricant sensitivity, re-processing capacity, dilution potential, densification, compressive, compressive, compressive, unstable, disintegration and deformation mechanisms. Finally, direct compression of gemfibrozile was performed and in vitrolysis test was performed. Results: Multi-volume analysis showed that on-site agglomeration is the most efficient excient production technology. Among the proportions of calcium anhydrate and sorbitol, 5:95 was the highest pharmacological performance. With the exception of on-site agglomeration, most technologies have long processing times, are very cumbersome to run, and have yielded very low yields. Also, aggregates obtained from new excisors with the best pharmacological properties contained 5% calcium anhydride. This material presented high plasticity, very good compressiability and flow. Its compactness was also better than that of the ® 80® and Rudy Presses, but lower than ® obtained against the Prosol SMCC90. The dilution potential was similar to that obtained for other commercially available materials. However, aggregates were more susceptible ® reprocessing ® prosol SMCC90 and rudy presses and less susceptible to lubricants. In addition, in formulations containing 600 mg of gem fiber zil, the best percentage of dissolution in accordance with USP38 standard S2 was obtained. Conclusion: From sorbitol and calcium phosphate anhydride (95:5), a new multifunctional excisant by situ aggregation was developed, showing sufficient compression properties,Cell-a-Appcasiones de Compreción de Compreción de Proprésione Diploda en Macesiones Ke Kontinen Principios Actibos con Propieudades Pharmacotecnicas Mui Pobres Como El Gemfibrosilo Parabras Crave: (3) ABSTRACT BACKGROUND: Present, The preferred method for the production of solid form is mainly due to direct compression due to its great versatility. The implementation of this technology requires the use of high-performance multifunctional excients to efficiently improve the tableting behavior of active ingredients with poor mechanical properties. An excellent choice is co-processing, which includes physical interactions of compounds to micro-specific levels to create very high-performance materials. Objective: To develop multifunctional excisors by in-situ aggregation of sorbitol and calcium anhydride. Method: Spray drying, agglomeration, hot melt granulation and co-precipitation were used for co-treatment employing calcium phosphate levels of 5-95%. Multi-volume analysis showed that on-site integration was the most efficient production technology. The ratio of calcium biphosphate to sorbitol with the best tableting performance was 5:95. The functionality of this new in-situ agglomerated excisor was compared to commercial excients named Prosobar SMCC90®, SerakSource 80® and Rudy Press ®. These materials have been tested for lubricant sensitivity, reprocessing capacity, dilute potential, densification, compressiability, compressiability, insolubleness, disintegration and deformation mechanism. Finally, direct compression of gemfibrodil and in vitrolysis tests were performed. Result: Multi-in-quantity analysis showing in-situ agglomeration as the most efficient production technique. The ratio of calcium biphosphate to sorbitol with the best tableting performance was 5:95. With the exception of in-the-in agglomeration, most technologies required a long processing time, were very boring to implement, and yielded very low yields. In addition, the aggregate obtained with this novel excisor had the best tableting properties and contained 5% calcium biphosphate. This material showed high plasticity and good compressiability and flow. In addition, its compactness was better than that of ® Cel-Actose 80® and Ludipress, but less ® those obtained for the ® Prosol SMCC90. The dilution potential was the same as that obtained for other commercially available materials. However, the aggregates showed high rework sensitivity and were less sensitive to lubricants ® ® prosol SMCC90 and Ludipress. In addition, formulations containing 600 mg of gemfibrodil had the highest percentage of dissolution that met the S2 standard of USP 38. Conclusion: Insitu aggregation of sorbitol and calcium anhydride allowed the development of new multifunctional excisants (95:5). It shows sufficient tableting properties and is possibleIt is used for direct compression applications with formulations containing active ingredients with poor mechanical properties such as gemfibrozil. Keywords: (4) PROBLEM approach tablets are the most accepted form of medicine, equivalent to 70% of all drugs sold globally. Among the reasons for its wide reception among patients are its easy dosing, good chemical and microbiological stability, low cost, low toxicity and ease of packing and transport (1). It can be produced by wet granulation, dry granulation, direct compression (DC) or a combination of these techniques, also called tablets or tablets. The majority of pharmaceutical companies prefer to use direct compression technology due to the versatility and ease of the production process, the short processing time required, the reduction of unit operations and the reduction of energy consumption (2). Currently, the strongest trends are the production of tablets using directly compressive semi-finished products, among which acetaminophen DC (90%), ibuprofen DC (85%), ciprofloxacin DC (65%) and naproxen DC (90%). Specifically. These drugs have been made directly compressive due to previous agglomeration processes with small amounts of excisants that give these properties. Most of these directly purchased semi-finished products come from China or India and are very low cost, requiring only the compression phase and reducing the normal manufacturing time required for the production of tablets by about 70%. Unfortunately, in many cases, these semi-finished products do not meet the minimum performance requirements and can cause one or more of the following problems: Pharmacotechnics: adhesion of tablet surfaces to top punches, lamination, pickening, low rupture resistance, high fluidity, poor flow rate, high surface roughness, poor physical appearance. Biopharmaceuticals: Long-term decay times and percentages of dissolved drugs outside the limits of drug specifications. Stability: Non-conformance to physicochemical and microbiological properties over the life of the product. Solving these problems requires additional excients with good physical and functional properties in the product, and other technical processes may be required, resulting in cost over-steering and delays in delivery in the production process. (5) Theory mark Despite major technological advances, the route of oral administration of pharmaceuticalsMost important and physiologically comfortable. Dosage forms that can be administered in this way include liquids, semi-solids and solids, the latter of which is most important, and includes soft and hard capsules, tablets, powders and granules. Among these, tablets are most pronounced for their easy administration, good chemical and microbiological stability, allowing the active ingredient to be administered properly and having low toxicity compared to other pharmaceutical forms (parenteral axes) due to their reduced bioavailability, low cost and ease of packaging and transport (3). Tablets can be wet, dry or a combination of both techniques. Wet granulation includes kneading a mixture of powders using a binder solution or dispersion and a wet sieve treatment. The binding agent solution is then removed by the drying process, and eventually the drying material is screened for the production of homogeneously sized particles. Dry granulation, on the other hand, is an excisive agent that does not require the addition of a binder solution but has very good self-binding properties. This kind of technology can be performed in two ways. The first is to compress the rollers, who are crowded with particles when they are under high pressure through its passage through the rollers that form the sheet. These are then provided to the grinding process or obtain granules of the desired size. It is important that these granules be lubricated before the tableting process. The second method uses a double compression process in which the mixture of materials receives precursor compression to form large, low rupture-resistant ingots or tablets, after which homogeneous granules, which are tablets in conventional sizes, are crushed or sifted (4). The new drying technology that has reached a big boom in the last 20 years is direct compression. In this, a mixture of excisors and active substances is under lubrication process and subsequent compression. For this reason, most pharmaceutical companies employ this technology because it involves less work in unit operation and does not directly or moisture the material during the manufacturing process, which promotes product stability. As explained above, a new option for tablet production is the use of semi-finished active ingredients. These types of products include:Active substances and excisors are developed by defined techniques. When using this type of product, only the compression process is required, greatly simplifying the manufacturing process. Advantages and limitations of direct compression technology (6): Advantages: (6) Stability: Moisture and drying are eliminated from the manufacturing process, so moisture and temperature sensitive active ingredients are less likely to decompose. • Dissolution rate: Tablets prepared by direct compression disintegrate into the primary particles of the active substance rather than in granules, allowing for a larger surface area of contact with the aqueous medium, thus reducing the dissolution time. Microbial contamination: Due to the lack of water in the production process and the shortening of production time, the risk of microbial growth is very low. Restriction: - Separation: Direct compression techniques are susceptible to separation (separation of components) due to the difference in density present between the active substance and the excisant. • High cost: Excisors used for direct compression require special manufacturing processes to achieve special properties such as compressiveness, compressiveness and flow rate. Among the excisors commonly used for direct compression are spray-dried lactose, precrystalline corn starch, microcrystalline cellulose, and spray-dried mannitol. Since most excisors on the market do not have all the features necessary for direct compression, new materials need to be developed with enhanced functionality and high functionality. One strategy for developing high-function excients is coproclothing. This technology allows two or more materials to be combined and interacted at the sub-private level, combining functionality and hiding the inappropriate properties of each. The coprocesing excisor has excellent properties compared to the physical mixture of the components that make it up. Ideally, co-treated excisors have the following advantages: no chemical changes: modification of performance properties should not alter the chemical properties of materials by promoting the development of pharmaceuticals, since new materials do not require toxicity tests required by regulatory bodies. • Good flow: Particle size and shape properties can be optimized for good flow. Improved compressitability: IfParticle size and distribution, as well as their morphology and density, can increase or decrease compressiveness depending on the density and dosage of the drug used. • Increased dilution potential: Dilution potential is the excient's ability to maintain compressiveness even when combined with poorly compressed substances. The ceractose ® (lactose and cellulose co-process) has a higher dilution potential than mixing individual components. (7) For the study of the compression properties of solids of interest in pharmaceuticals, different mathematical models have been proposed to explain the different behaviors presented by the material in relation to the applied forces that allowed it to characterize the compression process. The most commonly used models are Heckel, Kawakita (8) and Roy Emberger (9.10). JustIFATION tablets as the world's most consumed and accepted form of medicine have led the manufacturing industry in optimizing manufacturing processes to meet growing demand. The most commonly used alternative to reduce manufacturing time is the use of a direct compression process that improves the stability of heat and moisture sensitive active ingredients with less time, less unit operation, lower energy consumption and compared to wet drug production (2). The versatility of direct compression technology is given by the properties of the excisor used, which improves flow and increases the compressiveness of active ingredients with compressive and poor drug technology properties. Commercially, two modalities of the application of direct compression technology are known: (i) using excients for direct compression, (ii) or with the acquisition of directly compressible semi-finished products (direct compression formulations). Directly compressive semi-finished products are mainly imported from China and India and sometimes do not meet the required performance requirements, leading to operational delays and cost oversteer, which affects the competitiveness of the generics market. The development of direct compressive coprocessing and semi-processed excisants (direct compression formulations) in the Colombian environment is a technological capability that can improve the competitiveness of national industries and improve social indicators through the creation of new jobs in the pharmaceutical profession. The method currently used in the production of new high-performance excisors is coprociescing that combines two or twoUsing the right technology, we get a new excient with enhanced functions (11). For the realization of new coprocessing excisors, sorbitol and calcium phosphate anhydride have not been reported in the literature combining these two excisors into co-treated materials, and therefore new developments can be configured as state-of-the-art novelry. (8) Physical interaction at the particle level between HYPOTHES sorbitol and calcium phosphate anhydride is achieved by on-the-spot aggregation, improving pharmacoological and tableting properties and allowing its potential application as a direct compression excisant. Goal General Purpose Develop a co-treated excisant that can be used as a direct compress for incompressive drugs based on sorbitol and calcium anhydride. A specific purpose - to select the active substance as a model drug with low drug engineering properties - evaluates the following coprocescing techniques: Spray drying, co-precision, granulation by fusion and aggregation, and the most practical choice for the production of new excisor solutions • Perform functional testing of new co-processes - Conduct comparative studies of the compression properties of new excisors in relation to commercial co-processes: Pro sorv SMCC 90® (microcrystalline cellulose: colloidal silicon dioxide (98:2)), Ceractos 80®-α: cellulose powder (75:25)) And Ludipress® (α-lactose one hydrate: polyvinylpiloridone: crosspovidone (93:3.5:3.5)) - invitrolysis test according to the current USP, using selected coprocescing and selected poor drug technology characteristic active substances. Material materials and material methods Prosol SMCC90® (Lot 6909030220) were obtained from JRS Pharma (Rosenberg, Germany). Magnesium Stearate (Lot 25654) was purchased from the mineral Rio Tinto (Lucenac Valtizane SA). Sorbitol (Lot 20140405) and Calcium Anhydrate (Lot BCU250711) were obtained from Shandong Ruiyang Pharmaceutical Technology (Longwood, USA) and Innophos (Cranberry, New Jersey, USA), respectively. Gemfibrodil (Lot 241303947010) was supplied by the Kemorgano branch (Lugano, Switzerland). Seraktors 80 ® (Lot 1321) was purchased from Megul (Wasserburg). Rudypres ® (Lot 71036447G0), Cross Povidone (Lot 2912588Q0)

and Sodium Lauryl Sulfate (Lot 0012730186) were purchased from BASF (Ebion Naz, Switzerland), Germany. Phase I: Selection of model drugs, coprocessing and coprocessing technology selection of model drugs (9) - Drugs must now be treated in the industry only by wet granulation - as drug suppliers must have little or noDirect compressiability - the drug should be almost soluble in water - scientific reports linking the drug directly to the compression process should be few or non-present, which may allow the obtained results to be configured as state-of-the-art novelty - candidate drugs that are directly compressible must be highly sold in the generic drug market, so possible developments can have an advantageous impact on the industrial and social level in terms of affordability and appropriate therapeutic performance on the drug: Ibuprofen, Calcium carbonate, lorachin, nimes slide, chinadine, trinadine, gemfibrodil, metcalbamol, thiamine hydrochloride, folic acid, metaprorol sobrillation, quetilidine dichloride and naproxen base. The characteristics and selection of the active substance model were made taking into account the following properties and tests: water soluble: This was taken from a report in the scientific literature of 25oC. . Resistance to rupture: Pure active substances were compressed using monopunzonic tablet presses, (Compac 060804, Indemec Colombia) equipped with a flat face punch of 13 mm-mm-mm. Tablets obtained with a compressive force of 200 MPa. The hardness of the tablets was obtained using a bankel durometer (UK 2000, Manaskian, USA). • Compressiability: Apparent density was measured by collecting 3 g of sample in a 10 mL grade specimen. This measurement density was measured after the sample was 250 taps using an autotap analyzer (AT-2, quantachrome instrument, USA). The compressiveness of each material was based on the Kawakita model (8) :(1) here: stroke number (tap) Vi - initial volume Vn- volume (10) - flow: glass funnel (13 mm neck diameter) filled with about 2 g of material, and then by measuring the drainage time. It was expressed as g/s - technical monitoring: it was done by electronic search on Google using the name of the asset as a search parameter and the abbreviation DC (direct compression). The choice of EXCIPIENTS to use (3) The most commonly used processing material for direct compression processes is: alpha lactose: it has good flow properties and does not react with moisture-sensitive active ingredients. It has good tableting properties and high dilution potential. However, it reacts with amines and alkaline substances. Its function depends on its multi-form form. Pre-galatinized corn starch: it is very economical, has good flow and can properly homogenize principlesWhen used by wet granulation. It has self-lubricating properties. It is very versatile and can be used for direct compression, wetting and formulations, capsules and pearls. It has good compressive properties and is very sensitive to alkaline lubricants. When working on a high-speed tablet press, it is easily affected by pickles and can increase the decay time of tablets. • Microcrystalline cellulose: compact and compressive. Its low moisture content facilitates crystal gliding in the compression process and reduces picking. But it is an expensive excisor and has poor flow. Wet granulation affects its compact properties. In combination with magnesium stearate, it produces tablets with pickles and lamination. Those used require the addition of a disintegrator. Calcium phosphate: it is very economical. Its anemising and hydrating forms can be used for wet granulation and direct compression, respectively. Relatively low sensitivity to alkaline lubricants. However, lubricants and disintegrators need to be added, and the tablets have a high porosity and are not compressive. During storage, the dissolution rate tends to be reduced and miniaturized. (11) Manitol: Less hygrosoric than sorbitol. Its fine shape provides good flow and binding properties. In addition, the alpha shape has good compactness characteristics. However, it is more expensive than sorbitol. Dextrowth: Compression ratio is better when used in direct compression than wet granulation. However, the hardness and deficiency of tablets increase during storage. It is very hygrostic and reacts with the amino basis of the drug. Lactic acid: 40% sweeter than sucrose and not raise blood sugar levels. It is low hygrostic, has good flow and is not sensitive to alkaline lubricants. However, tablets with lower hardness than manlitol or sorbitol are less likely to pickle. Maltose: Not sensitive to hygrosmetry or magnesium stearate. It is sweeter than sucrose. Its tablets have low stability and fast decay time. However, it can increase blood sugar levels. The reasons for this choice are as follows: (i) These excisors have antagonistic deformation properties, as sorbitol is a plastic deformation and anhydrous calcium phosphate is very brittle. You can use these features to get new excients with improved properties. (ii) NothingThe co-process scientist (iii) combining these two excisors is intended to optimize by combining the good compression properties of sorbitol, which has excellent densification and low hygroscopic properties that characterize calcium phosphate aqueous. For the acquisition of the selected coprocessing material of the technology to be used, the following techniques were evaluated: spray drying, fusion granulation, co-precision and agglomeration. Each technique and the evaluation rate of sorbitol and calcium phosphate were tested as detailed in Annex I: enhancement of sorbitol and anhydride-free calcium biphosphate composites for direct compression applications. Spray drying (12) solids from liquids, dispersions or latex or latex with spray treatment and subsequent drying (14). Its pharmaceutical applications range from the production of direct compressive substances to the production of microcytes containing microencapsulation substances (11). Two subdivisions of this technique are known: (i) spray drying and (ii) spray condilling. Both processes are based on the formation of drops containing suspended substances. In spray drying, energy is added to the formed droplets, forcing evaporation of the medium through mass and energy transfer phenomena. In freezing spraying, only energy is removed from the droplets and the melt solidifies. Obtaining crushed particles using a spray drying process allows the production of particles of homogeneous size, composition and defined shape, improving dissolution and controlling residual moisture (15). Spray drying is also used: (i) the production of free-flow excisors such as spray-dried lactose, pharmaceutical granule production to which the binding agent is applied, is applied to the initial granules, which increase compressability, stability and dissolution. Similarly, modified release products include (iii) microcyclyte production containing low doses of drugs used in inhalers, (iv) obtaining stable amorphous solids, and (v) microencapsulation masking unpleasant odors and flavors. It is also used to protect penile substances from oxidation such as vitamins (14). The process is the next step (Fig. 1) (14): Concentration: The material to be treated must be found in the liquid medium as either a solution, suspension, dispersion or emulsion, and then subjected to a drying process in priority to its concentration. Atomization: concentrate is atomized insideThis stage is the basic mechanism for creating optimal conditions for the drying of the material and achieving the final properties of the material. This is the most important part of the technology because it is the stage at which the liquid is fragmented into droplets. Spraying is achieved by using nozzles. The atomizer controls the mass and surface ratio to achieve the optimum evaporation rate, forming droplets with a high surface area that promotes rapid evaporation and improves the thermal efficiency of the process. Adification also regulates the generation of particles of size, shape and density defined by uniform moisture content. In the drying chamber, a mixing of drops formed by hot air occurs, allowing evaporation of the solvent and obtaining a solid material. • Drying: The arid material comes into contact with hot inert air or gas. Hot gas provides the energy needed for solvent evaporation. The size and geometry of the dry chamber allows the dispersion of dry gas, which is the basic part for the drying of droplets. (13) Material properties such as porosity, density, and humidity vary depending on the operating conditions used. Fig. 1 Spray drying process scheme (6) These properties can define the formation characteristics of droplets and control the uniformity of the process, so the liquid to be treated must have low viscosity and concentration. Surface tension must also be controlled. Specific gravity, on the other hand, controls the operation of guns, nozzles and pumps used in the spraying process. Other variables to control are the temperature and volatility of the solvent, which affect viscosity and surface tension, modifying the properties of the droplets (14). Fusion granulation Nucleation is a process by which a new coprocessing material can be obtained, forcing the material or mixture of the active and excised substances to pass through a porous matrix. The process is carried out using controlled requirements of material temperature, pressure, mixing and inlet and outlet speed. Fusion granulation allows to obtain a product of uniform density, shape and size (16). The process stage is (i) mixing the dry powder using a normal mixer, (ii) adding a molten phase to the mixture of dry powders, mixing to achieve a homogeneous distribution, and (iii) extracting the molten mass through a cylindrical mesh or perforated screw with a circular hole with a diameter of 0.5 to 2.0 mm. The resulting material is then groundedDry, or spherical granules are obtained, followed by drying (17). (14) The obtained product is thermodynamically stable (not recrysttaled), and being closed reduces the possibility of microbial contamination. However, it is not recommended for thermally unstable products because it is a process that requires heat. The polymer material used must have very good flow properties and is such a complex process that such a complex qualified and properly trained personnel (17) is required. The fusion granulation process can be divided into four stages (see Figure 2) :(i) feeding, allowing the material to enter the system. (ii) Transportation is where the material is transported from the supply area to the die. At this stage of the process, the material is mixed and melted. (iii) where the granulated, molten material passes through the axial rotation matrix or axis; The size and shape of the material depends on the properties of the matrix (iv), and finally, the coming out material is cooled and cut to the required particle size (17). The scheme of the fusion granulation process in Figure 2 (6) Korimicar This technique uses a solvent that dissolves or disperses the material, and then performs a decompression evaporation process. This technique is also known as co-evaporation (17). On the other hand, in the coprecipation of solid dispersions of one or more low molecular weight materials, it is incorporated into a matrix such as PVP (polyvinyl pyloridone) or polyethylene glycol (PEG) 4000 or 6000 (17). Co-precipitation can be obtained by fusion, or precipitation from the solvent, by the process by which the matrix melts and another dissolution material is added to the appropriate solvent. The increase in solubility and dissolution rate in these systems is due to (18) -- reduction in the size of dispersed particles -- amorphousity of dispersed particles -- solubility effect of polymers on dispersed particles of the material -- agglomerates or no particle aggregation (15)-Crystallization in metastable form must significantly increase the molecular size of the polymer in these systems. For this reason, the most commonly used materials are the molecular weights of polyvinyl pyloridone (PVP) and polyethylene glycol (PEG) 1-20 kDa, preferring the formation of solid dispersions. The main advantages of the resulting material are rapid dissolution and increased bioavailability when the dispersed material is a drug. However, there may be changes in the crystal structure of some materialsCuring of tablets in storage (18). The scheme of the co-precipitation process is related to FIG. FIG. 3 Co-precipitation process scheme (6) It is a process that can convert aggregate solids (dust) into small units on a regular or agglomerated basis (17). The agglomeration process involves the addition of an aqueous dispersion of the binding agent to the mixture of previous additives, followed by a drying and sifting process. Small spherical particles are not formed during aggregation, but when it is possible to produce densified materials with improved flow characteristics. The main advantages of this technology are the production of free-flowing and low-free granules (6). (16) They return to the movement of the spiral waterfall. Therefore, frictional forces and smoothing of the surface of the particles occur as a result of different impacts (20). The variables that affect the process are the amount of wetting agent used and the plastic properties of the material used. However, there are other instrument-specific variables that affect the final quality of the resulting material, such as the rotational speed, load, angle, and operating time (20) of the friction plate. As the rate increases, the evaporation of the solvent increases, and as the load increases, the drying time increases, resulting in larger, denser particles. As the time of residence on the plate increases, the roughness of the material decreases and the particle size increases. Also, an increase in operating time or speed increases density and reduces the instability of the resulting particles (20). The adhesion of the material to the wall of the device can be eliminated by using an air injection system and a radial cutting system. A two-cylinder system has been developed and processed up to 160kg/h (20) as increased plate capacity is causing scaling problems. Figure 4 shows a picture of an integrated team. Figure 4 Rotary Dust Binder Rotary Disc Peristaltic Pump Control Panel (17) Annex 1, Functional Enhancing of Sorbitol and Niphosphate Composites for Direct Compression Applications, studies the effects of co-treatment techniques on the dust and tableting properties of the resulting material. The resulting material was evaluated for the following properties: • Particle size distribution: 20 g of material was taken and divided using Ro-Tap (RX29, W.S. Tyler Company, Mentor, OH)Stainless steel sieve with 250, 177, 150, 125, 75 and 45 mm. The average particle size was calculated from the log-normal distribution of the mean diameter plot and the cumulative frequency percentage. For data analysis, minitab software (v. 16, MiniTab University Graduate Corporation PA) was used. • True density: Approximately 10 cm3 of each material was collected and analyzed using a helium micropictinometer (OccupycII 1340, Micromerics, USA). • Apparent density and density 1 settlement: 20 g of each resulting material was taken and its volume was measured with a 50 cm3 graduated specimen. Auto taps (AT-2, quantachrome instruments, USA) are used to determine settlement density by measuring volumes up to 400 strokes. • Porosity of dust: Determined by equation: Ɛ s [1- ('aparente/'verdadera) x 100 (2) ' moisture content: Determined using infrared balance (MB200, OHaus, NJ, USA) for 10 minutes and 10 minutes. Flow: Determined by filling a glass funnel (13 mm neck diameter) with about 2 g of material and then measuring the drainage time. It was expressed as g/s - preparation of tablets: each of the 1 g material cylindrical tablets, made using a monopunzonic tablet press (Compac, 060804, Indimec, Colombia) equipped with a 13 mm flat face die and punch. The compression pressure was about 150 MPa and the connection time was 1 second. • Resistance to tablet breakage: determined using durometer (Vankel UK 2000, Manaskwan, USA). Collapse: Determined using a disintegrating device (39-133-115, Hanson Research Inc., Northidge, USA). (18) All results obtained and their corresponding analysis are related to Annex 1, Functional Enha Cement of Sorbitol and Calcium Anhydrate Biphosphate Composites for Direct Compression Applications. Phase II: It was found that the percentage of calcium anhydride evaluated by selecting the optimal proportion of excisors in co-treatment was 5-98%. Annex 2, Evaluation of tableting properties of new sorbitol and aqueous calcium biphosphate complexes, examines the effect of calcium anhydrate levels on the tableting properties of the resulting material. Using a material obtained from about 300 mg of tablets, it was made with a monopunzonic tablet press (Compac 060804, Indimec, Colombia) equipped with a 6.5 mm flat face punch when connected for 1 and 30 seconds. Compression pressures were found in the range of 10 to 300 MPa, followed by the following determinations:Acceleration and compression: Directly measured using load cells (LCGD-10k, Omega (model DP25B-S, Omega Empaning, Stanford, CT) connected to the voltmeter. The tablets were tested immediately after release. • Strain force of tablets: Rupture resistance data obtained in durometers (UK 200, Vankel, Manaskuan, NJ, USA) were converted into radial stress forces using the Fel and Newton equations (21) of cylindrical tablets. The piston speed was 3.5 mm/s • Sensitivity at the compression rate: determined by calculating the percentage of variation in compression pressure obtained during 1 and 30 second concantenation. The obtained compression pressure was determined using a Heckel model (22). • Compression, total densification of tablets, densification by matrix filling, reorganization/fragmentation and densification of tablets by resulting pressure (Py): determined from the Heckel model (22). Compactness: The stress force was determined using the Loyenberger model (10). • Water absorption: The water absorption rate of the tablets was determined from the percentage of weight obtained by the sample, over a period of 15 days, after being stored in the chamber at a relative humidity of 100%. (19) - Decay time: The tablets were tested at 20 swings/mini meters using 37oC distilled water using the Elweka GmbH disintegration device (39-133-115, Hanson Research Corporation, Northridge, CA) - Lubricant sensitivity: selected model lubricants are: magnesium stearate, stearic acid and tarktark. A batch of additives of about 10 g of the mixture (99: 1) was prepared, then passed through a sieve of 60 (250 m), mixed separately in a V mixer (Lidipharma machine, guarnagar, India) and mixed for 5 minutes. The tablets were then prepared at the time of concatenation for 1 second. The compression pressure was adjusted to a porosity of 20%. The lubricant sensitivity is (LSR) :(3), where H0 and Hlub are the stress forces of tablets prepared with or without lubricant, respectively. All obtained results and corresponding analyses are described in Annex II, Evaluation of tableting properties of new sorbitol and calcium anhydride complexes, Phase III: Comparative study with commercial coprocesados, annex 3, New Enhanced Sorbitol: Calcium Biphosphate Complex as a Direct Compression Excient: Comparative StudyCompared to the commercial ® processes of Prosolv SMCC 90®, Ceractose 80® and Rudy Press, a new co-treated excisor was added, taking into account its ®. Dissolution test: To evaluate the dissolution performance of new coproscies, formulations containing 600 mg of gemfidil, 25 mg of crosspovidone, 32 mg of saphalaurol, 17 mg of magnesium stearate and 142 mg of excisors were performed during the test. The material was mixed using mortar and pistil and then compressed using a monopunzonic tablet press (Compac 060804, Indimec, Colombia) at .75MPa to form a cylindrical matrix. Dissolution tests were performed using devices 2 (DT6-K, Elweka GmbH, Milford, CT) operating in 37oC and 50 rpm and 30 minutes. As a means of dissolution, a pH 7.5 phosphate buffer of 900 mL was used. After the test time, the appropriately filtered 5.0 mL alicote was collected from each glass and diluted to 50 mL with NaOH 1N. The concentration of gem fiber zil was determined by UV analysis at 274 nm (HACH DR500, HACXH, Aikuni, CO) according to usp 38 NF 33 specification. The results obtained and their corresponding analysis are described in Annex 3. New Reinforced Sorbitol: Calcium Biphosphate Composites as Direct Compression Excisors: A(20) Results and Discussion Phase I: Model Drug Selection, Coprocessing and Co-treatment Techniques The parameters used for the selection of active substances in the active principle of coprocessing techniques are associated with Table 1. Table 1. Hydration of Active SubstancesActive Substance Flow (g/s) Rupture (Newtonian) Resistance to CompressiveNess (%) 25oC (mg/mL) Reference Folic Acid 20 30 41 0.0016 (24) Calcium Carbonate 118 10 35 0.0013 (25) Cetilidine.2HCl 20 0 23 101.3 (26) Gemfibrodil 46 9 39 0.0278 (27) Ibuprofen 40 30 31 0.021 (28) Laura Tadin 16 130 35 0.0134 (29) Metcalbamol 28 25 80 33 4.210 (30) Metprorol Tartrat 16 98 35 1000 (31) Naproxen 18 87 35 0.0159 (32) Nimesrida 21 95 44 0.0 182 (33) Thiamine. HCl 17 50 26 1000 (25) Tinidazole 32 25 51 3.03 (34) Trimebutin maleine 37 28 36 50 (50) 35) (21) Figure 5. Basic drug engineering properties of the evaluated active substances - Technical monitoring: The query was performed on Google in an advanced search format, assessing the number of direct compression bidders and the number of publications associating assets with direct compression aspects. The results are reported in Table 2. The reported book magazine reviews were conducted between January and March 2014. Table 2. Bidders and Reports Linking Studied Drugs to Compression ProcessActive Substance No.Manufacturer No.Press (%) Folic Acid 0 7/300 (2.3%) Calcium Carbonate 8 (Calcium Carbonate DC 90) 7/410 (1.7%) Cetilyzine.2HCl 0 12/300 (4.0%) Gemfibrodil 0 3/392 (0.8%) Ibuprofen > 10 (ibuprofen DC 85) 20/300 (6.7%) loratadine 0 22/300 (7.3%) metcalbamol > 10 (Metcalbamol DC 90) 0% Methprorol Liquor Draw 0 0 0% Naproxen 3 (Naproxen DC) 8/360 (2.2%) Nimesrida 0 20/300 (6.7%) Thiamine. HCl 3 12/200 (6.0%) 0 20 40 60 80 100 120 140 Gemfibrozilo Nimes rida calcium carbon dioxide carbonate carbonate carbonate metcalbamol folic acid quetilidine dichloydine ibuprofenrotatinamine hydrotinidazole naprolol Resistance to butinmaleic acid (g/s) rupture (N) (22) tinidazole 0 4/250 (1.6%) trimebutin maleint 0 6/200 (3.0%) In the third column, a percentage is obtained by associating the direct compress with the total number of items obtained in the search. Taking into account the results of the literature survey and the performance characteristics of each material evaluated, gemfibrozile was found to be the most suitable active substance as a model for corresponding evaluation of its low water-soluble, low compression properties and new direct compression excisants by several reports linking this active substance directly to the compression process. The excisors selected for excisor selection and feature coprocessing were sorbitol (SOR) and calcium anhydride (ACD). These materials are characterized by having antagonistic and complementary properties in terms of solubility in water, porosity, flow and degree of plasticity. The physical properties of such materials are related to Table 3. Table 3.SOR and ACD(36) Properties Calcium Sorbitol Phosphate Calcium Anhydrous Plastic Deformation Brittle Plastic Deformation Hydrophosphobic Lubricants Generally Sensitive Unsensitive Melting Point (C) 95 1400 Solubility in Water 25oC 1.0 g/mL 1.0 g/ L molecular weight (g/mol) 182.17 136.06 Molecular formula C6H14O CaHPO4 (23) The properties of both materials met all physicochemical and microbiological tests described in USP 37 (see Annex 4). FIG. 6 shows the infrared spectrum of SOR and ACD, respectively. In the area between 3750 and 3300 cm-1, there is a characteristic O-H elongation that is very intense to the SOR due to the presence of hydroxyl, and this band looks very small with ACD, probably due to traces of wastewater. FIG. 6 SOR and ACD FT-IR spectrum SOR show bands due to C-H elongation in the region between 3000 and 2700 cm-1 and CH2 elongation between 2930-2850 cm-1. 59 8,68 88 4,83 10 83,41 13 90,6547.27 29 39.91 34 06.00 37 45.67 0.0 0.5 1.0 1.0 5 2.0 2.5 3.0 3.5 4.04.5 5.0 %T 500 100 0 150 0 0 0 350 0 400 0 W av enu mber s (c m- 1) 57 3.1089 8.68 10 67.32 11 31.29 13 85.35 16 52.03 23 74.33 34 24.72 0.0 0.5 1. 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5 %T 500 100 0 150 0 200 0250 0 30 The band found in the 0 0 350 0 400 0 W av enu mber s (c m-1) SOR (24) ACD, the band found in acd at 1652 cm-1, can be attributed to the characteristic vibrations of the trace of water strongly adsorbed on the phosphate basis (37). This band is also found in sor and is thought to be due to traces of its precursor, the glucose aldehyde basis (36). The characteristic C-H variant of the SOR was also found at 1475-1300 cm-1 and between 1000-650 cm-1 and between 1000-650 cm-1 The C-O elongation between 1000-1200 cm-1 and C-H elongation was found out of plane in the area between 1000-650 cm-1 C-H elongation. In ACD, you will find characteristic bands of P-O links in the range between 1200-800 cm-1 and 700 and 500 cm-1. FIG. 7 shows the sor and ACD dust diffractions. Six types of SOR multiforms (αΔε, E' and E subforms crystallized melts) are known. This form is commercially available (38). Diffring peaks obtained at degrees of 12, 14, 16, 18, and 26o correspond to typical reflections reported in literature in the multi-shaped range () (39). Fig. 7 SOR and ACD dust X-ray diffraction diagram CuK covic source (Peresto 1.540598,2.1.544426) 5 10 15 20 25 35 35 40 45 2⚠ACD(25) Calcium phosphate may be present in the form of anhydrated and hydrated products. In this case, the resulting diffring rate shows the characteristic diffring peak in an anetholysity form at 26, 28, 30, 32%). It is important to note that the characteristic reflections ⚠ hydrated forms reported in the literature of 12, 21, 23o2⚠ did not exist in diffring (40). Diffring grams obtained from these two materials are analyzed and discussed in Annex 2, Evaluation of tableting properties of new sorbitol and anhydrine calcium biphosphate complexes. Technology selection - spray drying The application of this technology for the production of this technology presents problems of adhesion to cyclones and drying chamber walls, and this process is most pronounced when the amount of sorbitol exceeds 50% compared to calcium phosphate yield close to 1%, and therefore could only evaluate the ratio (50:50) and (75:25) ratio (50:50) and (75:25): SOR, respectively. In addition, the processing time was very high, exceeding 8 hours. • Fusion granulation This technology is very complex and hasSince the melting temperature (97oC) is very close to caramelization (about 100 °C), it was easily affected by the caramelization of the SOR. The resulting material was a very hard crystal, which hindered the material grinding and screening process, especially as it passed through the mesh 60. This technology was able to achieve yields of up to 66%. Co-sedimentation Sorbitol's caramelization was the most important point in the application of this technology. As with fusion granulation, the resulting crystals were very difficult, cumbersome, and the yield obtained was around 50%. This cohesive technology obtained materials directly with very fast and very good drug engineering characteristics. This process was very efficient with a minimum yield of 87%. (26) Properties of materials obtained using each technology Testing technique ACD flow level TSa RRb Hc Trdd BDfCompesgpo PSi DTj (%) (g/s) (MPa) (N) (%) (g/cm3) (g/cm3) (g/cm3) (%) (am) (min) Coprecipitación 2 4.4. 3 2.8 320 0.7 2.71 0.40 0.63 22 85 320 5.0 10 1.3 2.9 303 1.7 2.47 0.46 0.51 5 82 293 5.5.0 6 20 6.9 3.4 343 3.2 2.24 0.71 0.80 32 69 139 5.8 50 13.4 3.1 300 5.5 1.86 0.70 0.80 33 62 260 7.6 80 7.8 2.5 225 2.4 1.67 0.50 0.59 15 70 89 6.9 98 9.3 0.6 56 3.3 1.49 0.65 0.94 33 56 63 0.8 Aglomeración 5 12.4 3 343 1.0 1.52 0.76 0.84 70 50 300 6.1 20 15.2 3.3 343 0.9 1.65 0.75 0.81 57 55 293 6.6 50 9.4 3.5 343 1.2 2.00 0.65 0.73 37 67 133 8.8 80 3.5 1.3 101 1.8 2.49 0.60 0.70 35 76 168 8.8 94 0.2 0.8 65 0.4 2.73 0.64 0.74 26 77 123 4.8 98 0.3 0.7 61 0.7 2.77 0.71 0.90 48 75 185 1.2 Granulación por fusión 2 12.5 2.9 343 0.5 1.35 0.54 0.71 25 60 14155 5 6.8 3.2 343 0.8 1.27 0.40 0.50 21 69 172 5.6 10 12.3 3.2 343 1.3 1.56 0.54 0.67 19 6 6 179 5.7 20 11.2 3.3 343 0.5 1.62 0.56 0.69 20 66 239 5.8 50 21.8 3.4 343 1.2 1.85 0 .1.85 0 .. 67 0.83 21 64 168 6.9 6.9 67 18.8 3.8 343 0.4 2.13 0.7 0 0.87 21 68 130 8.1 Spray drying 50 5.3 1.2 10 7 1.5 2.36 0.33 0 .41 70 86 141 14.9 75 0.1 1.3 102 8.3 2.50 0.41 0.49 7 96 271 0.3 a. Stress force, b. rupture resistance, c. humidity, d. true density, apparent density, f. density per settlement, g. compression ratio, h. porous, particle size j. decay time. In the agglomeration process, it was found that at the 2% phosphate level there was no significant change in the properties of the material, and calcium phosphate levels between 10 and 20% further showed no difference in results. (27) The details of the methodology, analysis of the results, and the conclusion of the choice of technology are based on Annex 1, Enhancements to Sorbitol andCalcium biphosphate composite material for direct compression applications. Phase II: Study of the compression properties of agglomerated products The optimal proportion of excisants in coproclothing was determined using heckel (22) and Loyenberger compression models (10). Compactness and compressability analysis The opposite natural contrast ln (1/ε) of the porous nature of the tablet was plotted against the compression pressure to obtain a heckel graph (22). The slope (m) of the linear region of this curve is a measure of the plasticity of the material (12) in inverse proportion to the pressure or Py produced. Therefore, the Py value <100 MPa shows a high ductal deformation after compression. The Heckel model is given by the following formula: (4) Where A is a piece obtained by extrapolation from the linear region to the axis of zero pressure. Other parameters widely used in this analysis are D0, Da, and Db, which are related to the initial packaging/densification of the material, the total densification of tablets, and the reorganization/fragmentation of particles in the early stages of compression. The compactness analysis was obtained from stress force data from the Roy Emberger model: Tmax exp(-P))) (5) where t, Tmax, P and .. It corresponds to the voltage force, infinite pressure stress force, sensitivity to compression, compression pressure and solid parting of tablets (9.10). (28) Table 5.Agglomerated Materials Pa Ld TSe 'f Compactg D ah D0i Dbj Compact Pill SRSm DTn ERo LSRp EFq WU r (MPa) (MPa-1) (MPa2) (MPa2) (MPa-1) (min) (%) (%) (N) Ab 5 4.1 0.02 268 0.85 0.39 0.47 862 60.5 30.2 1.5 1 0.49 33.3 14.0 A 20 3.2 0.03 269 0.77 0.30 0.47 76 0 82.7 41.2 1.6 0 0.22 45.7 24.6 A 50 4.8 0.01 252 0.63 0.29 0.33 560 91.6 45.3 5.9 0.39 47.3 16.7 A 80 3.7 0.01 155 0.63 0.13 0.49 509 195.1 15.7 30.0 1 0.33 239 9.8 A 94 4.0 0 8 3.4 0.54 0.14 0.40 347 354.8 21.9 30.0 0 0.23 400 1.3 PMc 5 4.9 0.02 330 0.61 0.39 0.22 867 42.0 4.2 1.03 0 0.15 38.7 18.2 PM 20 5.3 0.02 347 0.52 0.30 0.22 874 30.4 35.4 1.6 0 0.27 33.3 16.0 PM 50 5.2 0 117 0.59 0.29 0.30 480 143.4 2.1 3.4 0 0.17 153 10.9 PM 80 2.3 0 44.8 0.50 0.13 0.37 320 298.6 2.9 12.2 0 0.28 749 5.5 PM 94 1.5 0 33.2 0.48 0.14 0.35 303 394.8 27.4 30.0 0 0.60 726 2.5SORs 0 4.9 0.03 421 0.67 0.31 0.35 768 71.8 49.6 2.2 5.51 0.64 74.3 35.7 ACDt 100 1.7 0.01 48.9 0.44 0.17 0.27 260 383.1 14.3 30 0.31 0.14 648 1.1 a. Proceso, b. aglomeración, c. mezcla física, d. nivel de fosfato, e. fuerza de tensión del comprimido, f. susceptibilidad a la compresión, g. compactabilidad, h. densificación total del comprimido i. densificación por llenadoMatrix, tablet densification by reconstruction/fragmentation, k. compressi degree, l. dust consoli pressure, sensitivity to compression rate, n. decay time, o. elastic recovery, e.g. lubricant sensitivity, q. discharge output, r. water absorption, s. sorbitol, t. calcium phosphate aqueous data were evaluated using statistical methods of multivoliation analysis of the main component. The most excellent aggregate contains 5% calcium phosphate anhydrine. Details of methodologies, results and discussions were evaluated in Annex 2 (29) PHASE III: New aggregates obtained in a comparative study of new and commercial extents compared to Prosol SMCC90®, Ceraktose 80® and Rudix ®. The results obtained in each test will be described in Table 6. Table 6.Propidades Pharmakotecnicas del Nuevo Excipient Lee Coprocesados Commerciares Propidades de Polvo Pureva Adomelad SeracSource 80® Rudypress®Prosolb SMCC 90®ACDa SORb PSc (μm) 158 ± 20 137± 29 172 ± 22 80 ± 16 14.3 ± 2 173 ± 22 Densidad Apperent (g/cm3) 0.51 ± 0.003 0.48 0.4 ± ± 0.003 0.48 ± 0.001 0.36 ± 0 0.001 0.69 ± 0.001 0.64 ± 0.0 Densidad A centada (g/cm3) 0.94 ± 0 .94 0.94 0.94 0.02 0.7± 0.0 0.± 5± 0.0 1.03 ± 0.04 0.7 ± 0.0 4 Densidad Verdad (g/cm3) 1.52 ± 0.001 1.57 ± 0.001 1.52 ± 0.001 1.61 ± 0.002 2.99 ± 0.003 1.55 ± 0.002 ポロシダード (%)50.6 75.8 65.1 78.9 76.9 58.7 水分含有量(%)1 8.3 4.9 8 0.2 0.8 フロー(g/s) 19.8 ± 1.3 16.5 ± 1.9 22.5± 3.8 12.9 ±0.5 6.5 6.59 ± 1.1 23.9± 3.2 圧縮可能性 (MPa2) 13.3 20 22 25 39 15 Pyd (MPa) 57.6 145.6 239.7 102.7 383 71.. 8 Dae 0.67 0.48 0.52 0.36 0.44 0.67 Dof 0.39 0.26 0.32 0.23 0.17 0.31 Dbg 0.29 0.10 22 0.20 0.14 0.27 0.35 Auchch (MPa2) 862.4 424.8 360 449.6 260.2 768.4 SRSi (%) 30.2 22.4 58.9 1.1 14.3 49.6 c j (MPa-1) 0.016 0.0 0.003 0.014 0.006 0.029 Tmaxk (MPa) 4.1 4.6 2.3 5.5 1.7 4.9 Compact (AUCTS) l (MPa2) 268.2 141.7 48 .1 342.4 48.9 420.5 Lubricant sensitivity 0.28 0.17 0.82 0.61 0.13 Elastic recovery (%) 1.0 0.01 0.02 0 0 3 dilution potential (%) 37 36 40 33 82 40 Water absorption (%) 14 1.0 1.1 2.4 1.1 35.7 Collapse (min) 6.6 ± 0.6 6.3 ± 1.5 1.5 ± 0.6 > 30 > 30 8± 0.0 Dissolved gemfibrodil (%) 86 ± 6 53 ± 5.7 48 ± 4.8 35 ± 2.4 28 ± 5.4 17± 2.9 (30) Heckel, i. Sensitivity to compression, Sensitivity to compression k. Theoretical stress force at infinite compressed force, l. Area below the curve.From Roy Emberger's model. Details of the study's methodology, analysis of the results and conclusions are reported in Annex γNew Enhanced Sorbitol: Calcium Biphosphate Complex as a Direct Compression Excient: A Comparative Study.. Conclusion - Taking into account process performance, versatility and ease of scaling, and of the evaluated techniques, agglomeration can be said to be the most suitable technique for obtaining co-treated materials from sorbitol and calcium anhydrate. According to the results obtained in the test of densification, compressiveness, output, stress force, elastic recovery and pressure, coprocescing including SOR: ACD (95:5) of the evaluated percentage showed the best performance in terms of compression profile. The co-operation containing SOR: ACD (95:5) showed better properties such as densification and compactness than materials obtained through a physical mixture of copontes. Agglomerate materials present better plasticity and densification than Prosolv SMCC 90®, Ceraktose 80® and Rudy Press® together with the formulations used, gemfibrozile is the only co-process used in research that has allowed it to comply with the S2 dissolution standard of usP 38. The new agglomeration co-treatment was obtained from ACD and SOR, which can be used as direct compressive excisors for the preparation of active ingredient tablets with poor drug technical properties such as Gemfibrozile. Gemfidil.