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Opinion Article

Comparative Study of Oral Suspensions for Pediatric Patients

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DESCRIPTION

Pediatric is the branch of medicine that involves the medical care of infants, children, adolescents, and young adults. Two phase systems are frequently produced by oral solutions containing active ingredients with low water solubility (solid particles dispersed in the liquid). Aqueous solutions become viscous due to the presence of thickening agents, which also slow down caking and the rapid sedimentation of suspended particles. Due to their surfactant action, some of these compounds might also improve the stability of suspensions. Common thickening agents are semi-synthetic. Thickening agent; Hydroxyethylcellulose, Hypromellose, Tragacanth, Xanthan Gum is not marketed in small quantities appropriate for pharmacies and with certified pharmaceutical quality. When it comes to pediatric patients with fructose intolerance, sucrose should be avoided because it is hydrolyzed in the colon to the monosaccharide's glucose and fructose. While artificial sweeteners like sodium saccharin, sodium cyclamate, or aspartame have safe daily intakes, sorbitol and sorbitol solution are contraindicated for these people and may cause osmotic diarrhea.

Stability dissolved compounds are not subjected to hydrolysis and degradation in the same way as dissolved substances. However, in suspensions, the physical stability is significantly influenced by the particle size. A narrow and small particle size distribution is desirable in order to impact the sedimentation rate, as well as adjusting the density and viscosity of the medium to the particle size. To evaluate the preparation, distribution, and determine the maximum shelf life and in-use stability after opening the container, experimental stability testing is necessary.

Development of an alternative compounded suspension vehicle, the Deutscher Arzneimittel-Codex/Neues Rezeptur-Formularium (DAC/NRF) and other organizations, including hospital pharmacists, collaborated to produce a specific suspension vehicle that may be prepared by any pharmacy or ordered as a ready-to-use vehicle from a pharmaceutical manufacturer. The 10 most popular APIs for pediatric patients are currently used in stability testing of this suspension vehicle.

Sodium benzoate, Potassium sorbate, Methyl-4-hydroxybenzoate, Propyl-4-hydroxybenzoate, Propylene glycol preservatives are used in liquid oral dosage forms. In spite of new regulations and the development of promising new dosage forms, the preparation of suspensions for the special needs of paediatric patients remains an important assignment in pharmacies. Whenever a marketed suspension vehicle is not available or not suitable, e.g. for newborn, pharmacies should be able to prepare a preparation for the particular needs. Sometimes using tablets or capsules as the starting material is necessary because there aren't enough active medicinal components. In these situations, it is important to take into account how the excipients in the solid oral dosage forms would affect the stability and compatibility of the ensuing solution. Additionally, the API content of the tablets and capsules used as starting materials affects the extemporaneous preparation's API content and must be verified.

The pharmacokinetic characteristics of medications that are ingested are directly influenced by paediatric physiology. Between developing children and fully grown adults, there are differences in the absorption, distribution, metabolism, and excretion of drugs. The pharmacokinetic characteristics of medications that are ingested are directly influenced by paediatric physiology. Between developing children and fully grown adults, there are differences in the absorption, distribution, metabolism, and excretion of drugs. The clinician must consider the infant or child's underdeveloped physiology when evaluating symptoms, prescribing drugs, and making diagnoses of illnesses. The stomach plays a major role in many drug absorption variations between paediatric and adult populations. Due to their lower acid output, newborns and young infants have higher stomach pH levels, which create a more basic environment for oral medications. Certain oral medications must be broken down by acid to prevent systemic absorption. Because of the lower breakdown and increased preservation in a less acidic stomach region, the absorption of these medications is higher in children than in adults.

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