3PC-002 PRELIMINARY RESULTS ON THE USE OF ORAL REHYDRATION SOLUTION IN THE FORM OF GELATO FOR REHYDRATION OF CHILDREN WITH ACUTE GASTROENTERITIS

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Background Oral rehydration solution (ORS) is used to reverse dehydration. Successful dehydration treatment replenishes lost water and electrolytes. It can be done by consuming ORS, containing both electrolytes and glucose, because sodium and glucose transport in the small intestine are coupled. However, clinical practice shows that children refuse ORS due to its salty-sweet taste and unpalatability.

Purpose We hypothesised that freezing ORS containing a fruit/berry juice to a likeable texture in 'gelato' form could promote oral rehydration. This form has not previously been trialled for rehydration fluid administration.

Material and methods Apple and strawberry juice were the base and crystalline NaCl, water and glucose were added to the concentrations recommended by the World Health Organisation (WHO) ORS standard and revised formulas. The WHO's standard formula contains 90 mmol/L Na⁺, 20 mmol/L K⁺, 80 mmol/L Cl⁻ and glucose 111 mmol/L, but the WHO's revised formula contains 70 mmol/L Na⁺, 20 mmol/L K⁺, 60 mmol/L Cl⁻ and glucose 75 mmol/L. All ingredients were pasteurised at 80°C and cooled to 4°C in a shock freezer. The gelato was made in a Maestro HE. It was kept at -20°C in a gelato coolbox and served at -12°C. Portions of 200 g were given to children at the Infection and Emergency Units. The Ethical Committee's approval was obtained. All parents gave informed consent for participation.

Results Thirty-six children (1–15 years' old) were enrolled in the study. Fourteen (39%) children did not tolerate any amount, while 22 (61%) ate ORS gelato. Seven patients (19.4%) ate ≥10 g/kg/h (ORS consumption rate needed for acute dehydration phase). The mean amount eaten was 4.6 g per weight kg (SD 5.78 g/kg) – the rate needed for the maintenance of rehydration. There is a statistically significant correlation with the willingness to eat the gelato and a reported likeness of taste (Spearman rho value 0.639, p<0.001).

Conclusion Our results show that ORS can be successfully administered frozen as gelato. The small sample size is the major limitation of this study. Additional research is needed before we can introduce ORS gelato into clinical practice.

REFERENCES AND/OR ACKNOWLEDGEMENTS

The team acknowledges Ice Bliss SIA for making the gelato.

No conflict of interest.

3PC-003 WEIGHT-LOWERING PSEUDOEPHEDRINE-BASED PRESCRIPTIONS: MONITORING PATIENT FEEDBACK AFTER UPDATE OF NATIONAL PRICE LIST OF MEDICINES AND MAGISTRAL PREPARATION

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Background The decree 27/07/2017 of the Ministry of Health allow the prescription and dispensation in private pharmacies of weight-lowering magistral preparations containing pseudoephedrine. The commercially available pharmaceutical equivalent is unsuitable. Meanwhile, on 9 November 2017, the National Price List of Medicines and Magistral Preparation (NPM) was updated. Among several changes introduced, the price of magistral preparations were increased by 40% in order to offset additional charges related to general, preliminary and subsequent professional activities linked to preparation and dispensation. The hospital pharmacist, operating in the local pharmaceutical services, guarantees the appropriate supervision of these prescriptions.

Purpose To evaluate whether the price change, due to update of the NPM, has affected the number of prescriptions and patients considering a territorial pharmaceutical service.

Material and methods The number of prescriptions, patients and price of preparations, and other data regarding prescriptions have been collected using Microsoft Excel. Period analysis according to date of dispensation: from 1 September 2017 to 11 August 2018, divided into five 69 day periods (from P1 to P5), of which one was prior and four after 9 November 2017.

Results In the analysed period, from 1 September 2017 to 11 August 2018, 1671 prescriptions were dispensed, referring to 442 patients from 17 different pharmacies. The average number of patients treated per period was 159. P1: 236 preparations, 158 patients, average price € 16.79. P2: 321 preparations, 170 patients, average price € 30.35. P3: 310 preparations, 148 patients, average price € 31.52. P4: 343 preparations, 147 patients, average price € 31.98. P5: 461 preparations, 184 patients, average price € 31.63.

Conclusion The average price between the first and fifth period has increased by 88%. Despite the substantial increase in price, there has not been a substantial variation in the number of dispensations and patients treated, underlining that the pharmacist's professionalism and his galenic skills can compensate for the lack of suitable commercially available pharmaceutical equivalents.

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Law 94/1998, Decree 27/07/2017 of the Ministry of Health, Decree 22/09/2017 of the Ministry of Health.

No conflict of interest.

3PC-004 WHAT HAPPENS WHEN INSULIN ASPART IS DILUTED IN DEXTROSE?

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Background In hospital, medications for infusion are mostly diluted in saline. In neonatal resuscitation, glycaemic instabilities are frequently observed in premature newborns, hence insulin treatment is started. In our establishment, insulin aspart is used and diluted in a 5% dextrose solution (D5%), due to sodium restrictions in newborns.

Purpose To evaluate the impact of the choice of D5% diluent on the stability of the insulin aspart at 1 U/mL.

Material and methods The pharmaceutical specialty composed of insulin aspart and its two preservatives (phenol and metacresol) were diluted in saline or D5%. The impact of the diluent on the stability of insulin aspart was studied by high-performance liquid chromatography with UV detection (HPLC-UV). A stability indicator method,¹ adapted from the method of Poulsen *et al.*² and developed for insulin aspart diluted in saline, was used. The prospective formation of a new compound in the different diluents was evaluated by HPLC with a mass spectrometry detection (HPLC-MS) in full-scan mode. The kinetic of the new compound's appearance was studied by relative evaluation of HPLC-UV signals during 1 week for insulin at 1 U/mL diluted in D5% (n=4).

Results The three products contained in the pharmaceutical specialty diluted in saline correspond to the three signals identified in HPLC-UV (elution order: phenol, metacresol and insulin aspart). After dilution of insulin aspart in D5%, we noted a fourth signal. pH influence and forced degradation tests failed to attribute this signal to insulin or preservatives' degradation. HPLC-MS analysis revealed a mass difference of 162 daltons between insulin and this product, which corresponds to a glycation phenomenon of insulin aspart. Finally, the kinetics shows that the insulin glycation phenomenon seems to increase with the contact time between insulin and glucose until a plateau is reached after 24 hour of contact.

Conclusion This work highlighted the instability of insulin in D5% and showed the phenomenon of insulin aspart glycation. To better characterise this phenomenon, the biological effect of glycation on insulin activity have to be determined, since a decrease in activity has been observed for human insulin.

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No conflict of interest.

3PC-005 STABILITY STUDY OF A 10% SODIUM BENZOATE ORAL SOLUTION

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Background Defects in the urea cycle are genetic diseases in which nitrogen accumulates as ammonia, resulting as highly toxic, especially in paediatric patients. Sodium benzoate (SB) is conjugated with glycine, giving rise to hippurate, which is excreted in the urine. Currently there are only intravenous SB commercial presentations, but no oral preparation is commercialised. Due to this, its manufacture in hospital pharmacy services is necessary.

Purpose The main objective is to evaluate the stability of an oral solution of 10% SB at different storage conditions for the treatment of urea cycle disorders in paediatric patients.

Material and methods Initially, six 10% SB samples were prepared from the commercial SB powder (Acofarma) and sterile water. Three were kept at room temperature and three were stored at 2°C–8°C during 30 days, protected from light. On the other hand, SB was characterised spectrophotometrically in water, to obtain a calibration curve. We studied

several physical and chemical parameters after preparation (day 0) and after 7 and 30 days. These parameters were colour, opacity and the presence of precipitation, absorbance and pH. Each preparation was visually inspected in front of a black and white background. pH measurements were carried out by pH indicator strips. All absorbance measurements were obtained after dilution of solutions, with a Shimadzu spectrophotometer model UVmini-1240 UV-Vis.

Results All 10% SB solutions were initially homogenous and transparent. A calibration curve was obtained at 223 nm ($y=56\,495x+0.0177$; $R^2=0.9995$), with an average recovery percentage of 99.92% (SD=1.21; CV=1.21). On day 7 post-elaboration, an average degradation of 1.49% of active ingredient was observed in room-temperature stored samples and 2.82% in refrigerated samples. On day 30, the percentage of loss increased to 2.55% and 3.48% respectively. After 30 days, no colour change, no opacity and no precipitation were observed. In all test solutions the pH-values remained unchanged.

Conclusion The results allow us to conclude that our 10% SB oral solution, used in urea cycle defects in paediatric patients, are physically and chemically stable for at least 30 days when stored at room temperature or at 5°C±3°C with protection from light.

REFERENCES AND/OR ACKNOWLEDGEMENTS

N/A.

No conflict of interest.

3PC-006 ANALYSIS OF THE REGIMENS ESTABLISHED AT THE PHARMACY SERVICE FOR TOTAL PARENTERAL NUTRITION AND THE USE OF GLUTAMINE AS A SOURCE OF NITROGEN

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Background The recommendations for the appropriate composition of total parenteral nutrition (TPN) for adult patients with different pathologies have been changing over the years as new studies are conducted, tending to be higher in protein and lower in total kilocalories.

Different guidelines such as the European and the American Society of Parenteral and Enteral Nutrition (ESPEN and ASPEN) or the Canadian Clinical Practice Guidelines are referents on the subject.

Purpose To analyse the accuracy of the regimens established at the pharmacy service for TPN in 2011 regarding the amount of protein, and also to evaluate whether glutamine is being used as supplementation or as a source of nitrogen to meet the recommendations.

Material and methods A retrospective study covering the period from January 2018 to August 2018 was conducted in a University Hospital evaluating the prescriptions of TPN and whether they were supplemented with glutamine or not. Data were collected from an Acces base designed for the elaboration of the TPN bags.

Then, a review of the total amount of nitrogen in the regimens was conducted.

Results A total of 2296 prescriptions of TPN were received at the pharmacy service. Regarding these prescriptions, 1121