Formulation development of paracetamol instant jelly for pediatric use

Samah Hamed Almurisi[a], *Abd Almonem Doolaanea*[a,b], *Muhammad Eid Akkawi*[c], *Bappaditya Chatterjee*[d], *Khater Ahmed Saeed Aljapairai*[e] *and Md Zaidul Islam Sarker*[a]

[a]Department of Pharmaceutical Technology, Kulliyyah of Pharmacy, International Islamic University Malaysia, Kuantan, Malaysia;
[b]IKOP Sdn Bhd, Kulliyyah of Pharmacy, International Islamic University Malaysia, Kuantan, Malaysia;
[c]Department of Pharmacy Practice, Kulliyyah of Pharmacy, International Islamic University Malaysia, Kuantan, Malaysia;
[d]Department of Pharmaceutics, SPPSPTM, SVKM's NMIMS (Deemed to be University), Mumbai, India;
[e]Department of Pharmaceutical Engineering, Faculty of Chemical and Process Engineering Technology, University Malaysia Pahang, Gambang, Malaysia

ABSTRACT

Objective: Paracetamol is a common antipyretic and analgesic medicine used in childhood illness by parents and physicians worldwide. Paracetamol has a bitter taste that is considered as a significant barrier for drug administration. This study aimed to develop an oral dosage form that is palatable and easy to swallow by pediatric patients as well as to overcome the shortcomings of liquid formulations.

Methods: The paracetamol was encapsulated in beads, which were prepared mainly from alginate and chitosan through electrospray technique. The paracetamol beads were sprinkled on the instant jelly prepared from glycine, i-carrageenan and calcium lactate gluconate. The paracetamol instant jelly characteristics, in terms of physical appearance, texture, rheology, in vitro drug release and palatability were assessed on a human volunteer.

Results: The paracetamol instant jelly was easily reconstituted in 20mL of water within 2 min to form jelly with acceptable consistency and texture. The jelly must be ingested within 30 min after reconstitution to avoid the bitter taste. The palatability assessment carried out on 12 human subjects established the similar palatability and texture of the paracetamol instant jelly dosage comparable to the commercial paracetamol suspension and was found to be even better in overcoming the aftertaste of paracetamol.

Conclusion: Such findings indicate that paracetamol instant jelly will compensate for the use of sweetening and flavoring agents as well as develop pediatric dosage forms with limited undesired excipients.

KEYWORDS: Beads; jelly; taste masking; paracetamol; palatability

DOI: https://doi.org/10.1080/03639045.2020.1791165

FUNDING

This work was funded by International Islamic University Malaysia Research Initiative Grant Scheme [Grant Number. P-RIGS18- 026-0026].