# ICRIPS 2019

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3RD INTERNATIONAL CONFERENCE ON RECENT INNOVATIONS IN PHARMACEUTICAL SCIENCES

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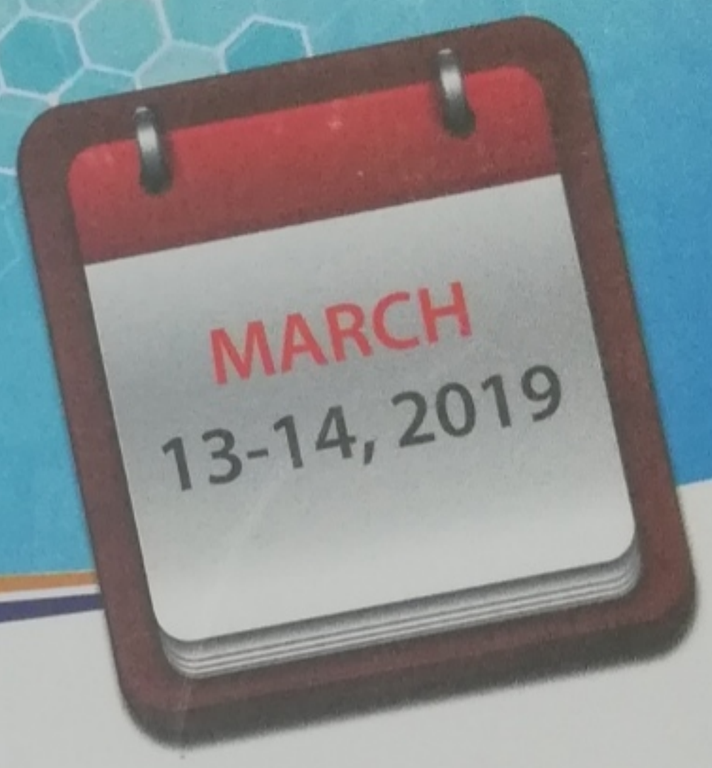


# Abstract Book

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Riphah Institute of Pharmaceutical Sciences, 7th Avenue, Sector G-7/4, Islamabad - Pakistan.

Phone: +92 (51) 2891835-38 | Fax: +92 (51) 2891471, 2890690 | Website: icrips.riphah.edu.pk | www.riphah.edu.pk

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# Cellulosic and acrylic polymers based solvent-evaporated composites for sustained drug release: Preparation and *in vitro* characterization

Abid Mehmood Yousaf*, Yasser Shahzad, Talib Hussain, Neelam Zaman

*Department of Pharmacy, COMSATS University Islamabad, Lahore, Pakistan*

*Correspondence: abidyousaf@cuilahore.edu.pk

**Abstract**

The emphasis of this research work was fabrication and *in vitro* evaluation of controlled release polymeric blends or ternary solid dispersions for sustaining the burst effect of BCS class drugs. Numerous blends were formulated with ethyl cellulose (EC), eudragit S100 or eudragit RS100 in combination with hydroxypropyl methylcellulose (HPMC) using 5-fluorouracil (5-FU) as a model drug. The blends prepared via the solvent evaporation method of solid dispersion formations were trialed for *in vitro* release of the active ingredient, and the data were processed through different mathematical models to appraise the release kinetics and mechanisms. Further assessment was carried out using X-ray diffraction (XRD), differential scanning calorimetry (DSC) and scanning electron microscopy (SEM). Formulations consisting of 5-FU/HPMC/ (EC or eudragit) at the ratio of 10/10/30 (w/w/w) remarkably alleviated the burst effect *in vitro* as compared to plain 5-FU. Particularly, EC demonstrated better controlled release behavior than did eudragit S100 and eudragit RS100 (~75% vs. 90% in 8 hrs.). Influence of higher concentration of EC on drug release control was investigated with a solvent-evaporated polymeric composite formulation containing 5-FU/HPMC/EC at the ratio of 10/10/40 (w/w/w). 5-FU existed in the amorphous form in all the four above-mentioned formulations. Hence, these four optimized formulations, particularly formulation containing 5-FU/HPMC/EC (10/10/40, w/w/w), might be potential sustained release drug delivery systems to mitigate or completely exclude burst effect problem associated with BCS class 1.

**Keywords:** BCS class 1, Burst effect, Controlled release, EC, Eudragit, HPMC, Polymeric