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### Applications of polymeric biomaterials for controlled drug delivery

Farooq Azam<sup>1</sup> and Hira Ijaz<sup>1,2</sup>

<sup>1</sup>University of Agriculture Faisalabad, Pakistan

<sup>2</sup>University of Sargodha, Pakistan

The purpose of this study is to fabricate chemically cross-linked polyvinyl alcohol co-poly (methacrylic acid) hydrogel (PVA-MAA hydrogel) for pH responsive delivery. Polymeric micro particulate systems were prepared by chemical cross-linking method that swells when in contact with water thereby improving mechanical strength as well as stability. After the formation of cross linked polymeric network the drug Perindopril Erbumine was loaded at pH buffer of 7.4 or pH 6.8. The prepared samples was subjected to thermal analysis, X-ray diffraction studies, energy dispersive spectroscopy, scanning electron microscopy, transmission electron microscopy, zeta sizer and zeta potential. Furthermore, optimized formulation was toxicologically evaluated on the model animal (rabbit). Toxicity studies were conducted on albino rabbits where two groups will be designed. Group I was control and treated with water. Group II was treated with 2.5 g/kg orally (PE)-PVP based hydrogel micro particles. Animals were observed physically and corporally for variations in dermal layers, hair, mucosal layers, eyes, sleep duration, salivation frequency, coma, diarrhea, death rate, change in body weight, food and water intake for 14-16 days on regular basis. After 14-16 days, blood samples were collected for hematological and biochemical analysis. Vital organs i.e., heart, liver, kidney, spleen, liver and lungs were detached, weighed and shifted into containers filled with formalin for histology studies. Afterwards, results will be statistically concluded by analyzing the data through statistical tools. Our investigations indicate that PVA-co-poly (MAA) hydrogel is safe and suitable delivery system, developed for oral delivery of Perindopril Erbumine.