



Novel Amphiphilic Block Copolymers

A novel family of Amphiphilic Block Copolymers (ABCs) are developed based on self-associating poly(ethylene glycol)-b-poly (ϵ -caprolactone) (PEG-b-PCL) bearing pendent functional groups on the PCL block and/or PEG end (Figure 1). These ABCs are better choice for linking of different molecules for the purpose of drug delivery to specific targets eventually leading to enhance potency for biologically active components. At Meros Polymers Inc, we developed a range of ABCs that are tailored to link different drugs bearing specific functional groups.

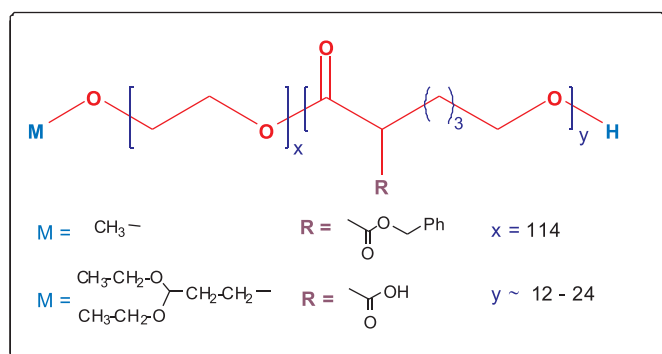


Fig 1: Chemical structure of the functionalized PEG-b-PCL copolymers

Our target specific ABCs are chemically flexible, potentially biocompatible and hydrolytically degradable. Such properties make this new class of ABCs ideal for versatile pharmaceutical applications in delivery of drugs or diagnostic agents.

Meros Polymers:

We offer a library of polymers based on functionalized PEG-b-PCL that differ from each other by the structure of the pendent group on the PCL block. Members of this library are shown to self-assemble to Nano carriers that may be found suitable for a specific need in delivery and/or encapsulation of certain drugs with distinct physicochemical properties (Figure 2). For instance, Nano carriers formed from the PEG-b-PCL bearing benzyl carboxylate groups on the PCL segment, (known as ExCell™) are shown to be thermodynamically and kinetically more stable than their unmodified PEG-b-PCL counterparts. On the other hand, PEG-b-PCL polymers bearing pendent carboxylic acid groups are desired for chemical attachment of various drugs, imaging agent, etc to the core of polymeric nanocarrier.

Analogue polymers within this library with functional groups on the PEG segment are also offered. The presence of functional group on the PEG end permits modification of self-assembled nano-carriers with different ligands for interaction with target cells (e.g., cancer cells).

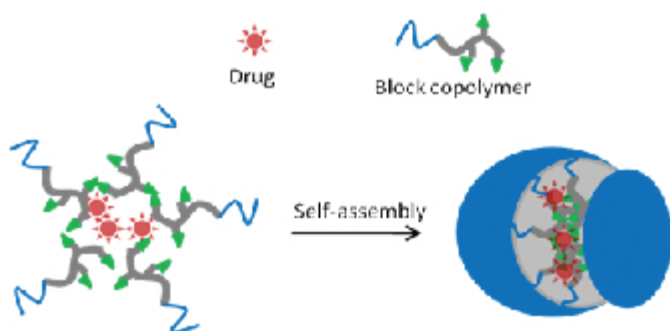


Figure 2: Self-assembly of PEG-b-PBCL copolymer into micelles and encapsulation of drugs by micelles

The ABCs with pendent group on the hydrophobic block, offered by **Alberta Research Chemicals Inc.** (ARCI, www.arciglobal.com) are covered by composition and use patents issued or pending in the U.S., Canada and other jurisdictions.

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Selected References

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