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Extraction of PEGylated nanoparticles by immunoprecipitation

Youcef Chakib Hacene[1], Philippe Grenier[1], Nicolas Bertrand[1]
[1] Faculty of Pharmaceutical Sciences, Université Laval, Quebec City, Québec, Canada.
Contact information: nicolas.bertrand@pha.ulaval.ca

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Purpose

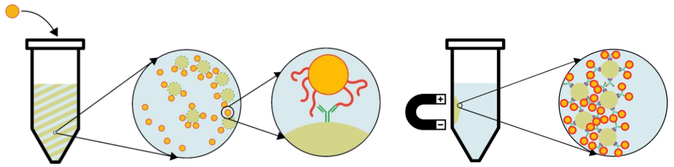
1. To develop a methodology for the specific extraction of PEGylated nanoparticles using immunoprecipitation.
2. To analyse the variation in the size distribution of nanoparticles in vivo.

Methods

1. Nanoparticles used:

Liposomes PLGA-PEG PEGylated proteins

2. Immunoprecipitation using AntiPEG antibodies

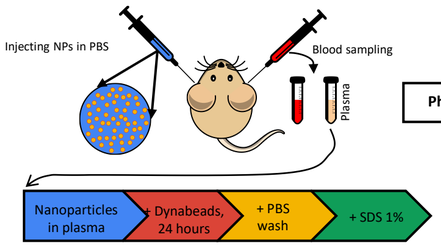


3. Radio- and fluorescently-labeled PLGA-PEG nanoparticles were injected in mice intravenously and intraperitoneally.

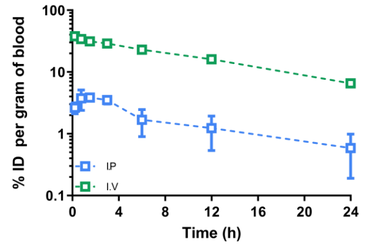
4. Nanoparticles are extracted from mice plasma and analyzed using nanoparticle tracking analysis.

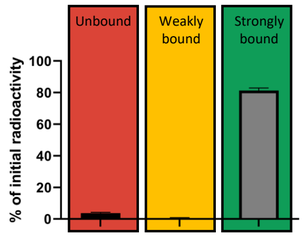
Results

1. Extraction of PLGA-PEG nanoparticles after administration in vivo:

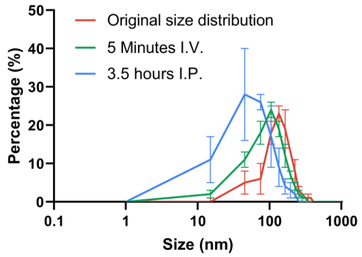


2. Pharmacokinetics:

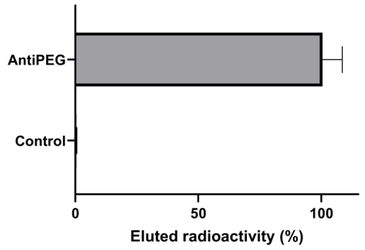




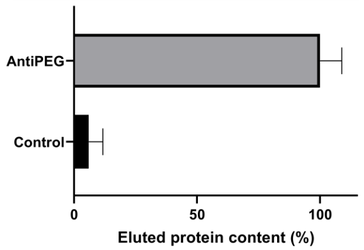
3. Size analysis of extracted nanoparticles:



4. Extraction of PEGylated liposomes:



5. Extraction of pegaspargase (Oncaspar®):



Discussion

1. After the administration of PLGA-PEG nanoparticles, their specific extraction from mice plasma is possible using immunoprecipitation.
2. Pharmacokinetics study indicate that the blood concentration of nanoparticles depends on the administration route.
3. The size of nanoparticles reaching the bloodstream, is different when nanoparticles are injected intravenously and intraperitoneally.
4. The extraction by immunoprecipitation is not limited to PLGA-PEG nanoparticles but is also applicable to PEGylated proteins and liposomes.

Conclusion

The specific extraction of PEGylated nanoparticles is feasible using immunoprecipitation. This method is successfully applicable to observe the biological sieving process occurring after intraperitoneal injections.

Aknowledgements

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