

DiaChemo- Chemotherapeutic Drug Selective Nanoparticles and their Application in a Point-of-care Therapeutic Drug Monitoring Device

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The decision-making in chemotherapy nowadays depends on standard methods that are liquid chromatography followed by mass spectroscopy (LC-MS/MS)¹ or capillary chromatography; both are labour- and cost-intensive and can be performed only in dedicated hospitals and laboratories. This lead to a minimal therapeutic drug monitoring in patients and hence that 30-60% of drugs are administered without clinical benefits.

We developed approaches for point-of-care devices for quantification of chemotherapeutic drugs in small body fluid samples and in clinically relevant concentrations. Some based on the combination of highly selective nanoparticles extracting the drug from plasma samples and liquid crystal phase separation incorporated in a microfluidic lab-on-a chip device (optofluidics based)². Others based on highly sensitive fluorescence read-out of differences in emission of parental drug and its metabolite³. These techniques will allow the real-time drug monitoring while the patient undergoes treatment. The proposed therapeutic drug monitoring should reduce adverse effects by too high drug dose, detect under-treatment as the administered drug dose does not reach the minimum effective concentration the therapeutic outcome and reduced health care costs.