Glycan capture and release using reversible hydrazone polymer based solid phase extraction

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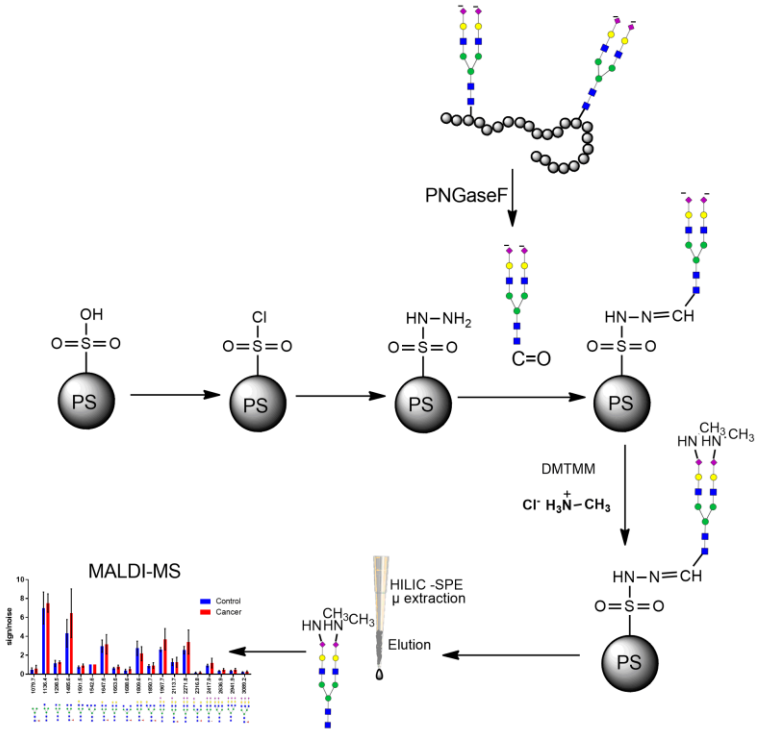
Glycans are key components in most biological and pathological processes including: recognition, inflammation, cytotoxicity, cancer, autoimmune diseases, viral infections, bacterial infections are some examples. Characterization of body fluids glycans with matrix-assisted laser desorption/ionization mass spectrometry (MALDI-MS) in positive-ion mode needs a derivatization step to stabilize and neutralize the negative charge on sialic acids, a class of acid sugars attached to the end of glycoproteins, glycolipids or gangliosides. Hydrazide beads to capture reducing end free glycans are a powerful and efficient method for purify glycans from complex matrix. The capture-release method simplifies the glycan preparation, producing pure samples.



Schematic preparation of functional resin synthesis and glycan purification

Hydrazide functionalized beads are synthetized starting from polystyrene(PS). PS beads are sulfonated, afterwards chlorosulfonated with chlorosulfonic acid and then converted into PS sulfonyl hydrazide by reaction with an excess of hydrazine. Hydrazide activated PS beads can be produced in large amount, high yield and allow an easy and fast purification of free reducing end glycans from complex samples mixture for spectrometry analysis.

Keywords: Glycans, solid phase extraction, hydrazone

References

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