Selected Reaction Monitoring (SRM)

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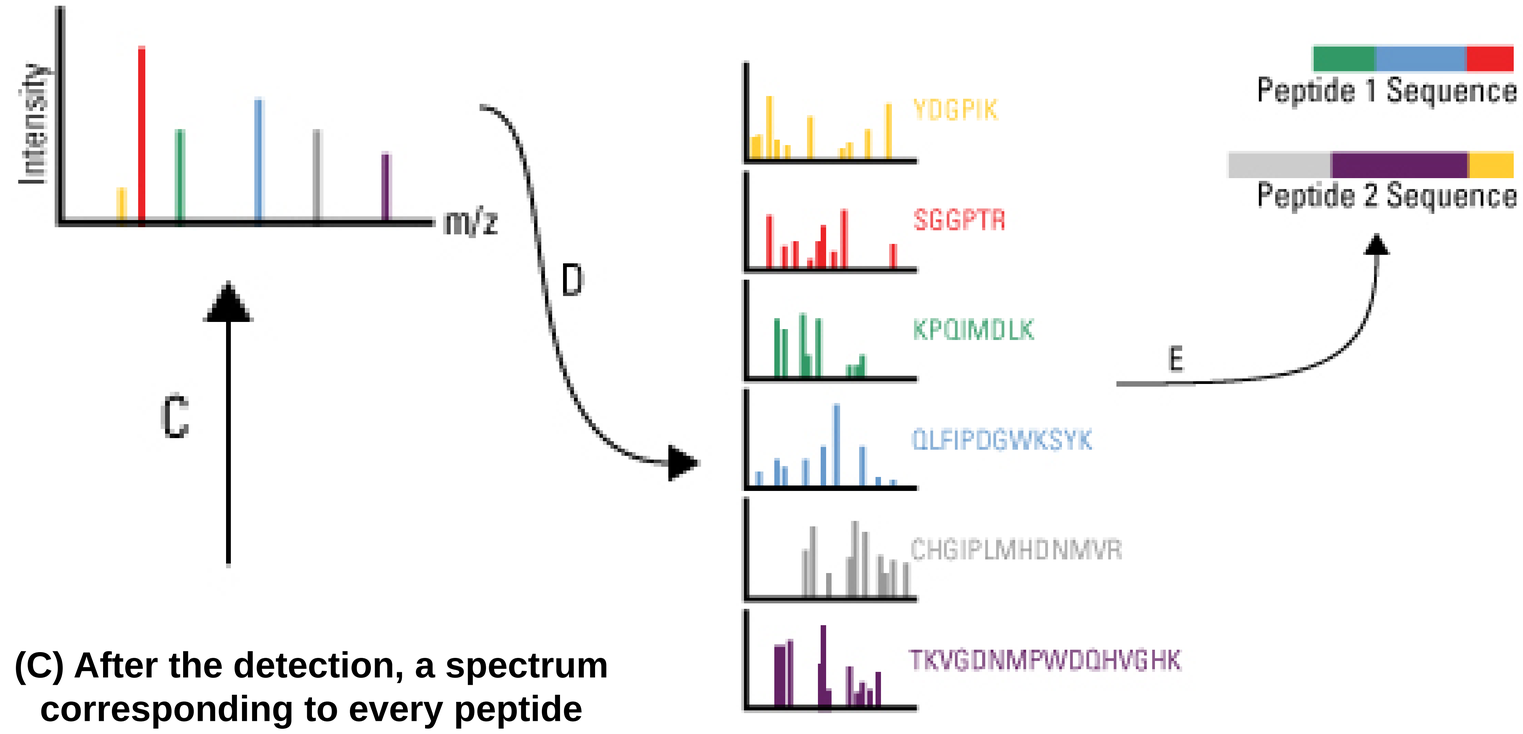
Introduction

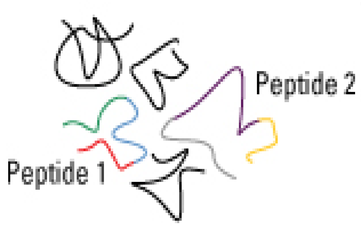
We propose the SRM technology as a complementary method to the Western Blot for the detection and quantification of proteins in a sample. The technique Western Blot has its own limitations: i) it detects only a protein –of–choice, ignoring any non-relevant proteins, ii) the sensitivity of the technique depends on the specificity of the antibody and iii) Western Blot is expensive and time-consuming. SRM allows a more accurate study of the proteins present in a sample.



(C) After the detection, a spectrum corresponding to every peptide detected is obtained. The accurate abundance of the original protein can be quantified (D, E) .

How it works

(A) First, the sample receives a tryptic digestion

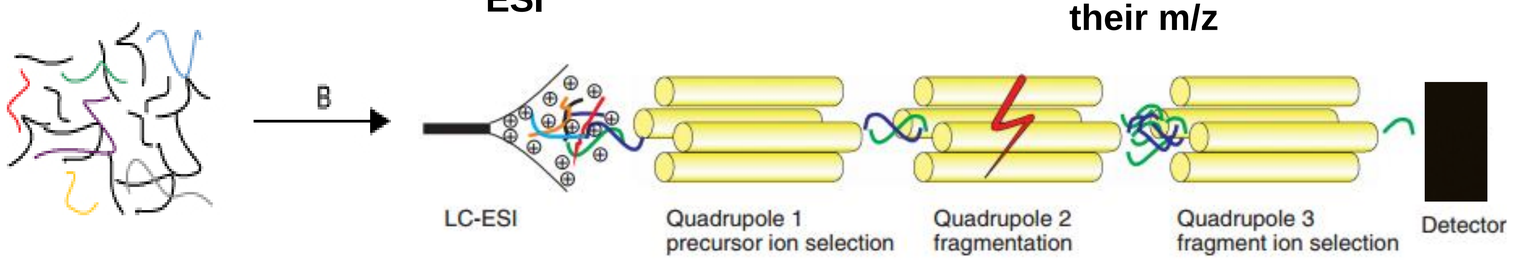


A

(B) Then the peptides generated are separated and ionized through a LC-ESI

(B') The peptides are selected in a first quadrupole attending at their m/z

(B'') Selected peptides are fragmented in a second quadrupole, which acts as collision chamber, and then separated again in a third quadrupole



Conclusions

The advantages of SRM with respect Western Blot are remarkable: i) it can detect up to hundreds of different proteins in a sample, ii) SRM is more sensitive, because just 50 copies of the target protein per cell are enough for the detection and iii) once it has been made an investment in the necessary machinery to develop this technique, the detection of proteins in a sample turns into a cheaper, faster, more specific and full-quantitative procedure, without the need of using antibodies. Because SRM technology is increasing its use, there have been developed databases where the scientific community upload information about protocols and standards for each protein with the aim to facilitate the work to other researchers.