Affinity-based SPE sorbents have been developed to be selective in extracting the target analytes like molecularly imprinted polymer (MIP) and immunoaffinity sorbent.
Immunoaffinity columns (IAC) are biological sorbents based on the use of antibodies that are specific to the target analytes.
Molecularly imprinted polymer is a synthetic material with artificially generated three-dimensional network able to specifically rebind a target molecule.
Based on molecularly imprinted polymers, AFFINISEP's AFFINIMIP® SPE cartridges have the advantages to be highly selective and specific. Contrary to IAC, AFFINIMIP® SPE cartridges are chemically and thermally stable, compatible with all solvents as well as cost effective.

PROPERTIES OF MIP AND IAC

Feature	IAC	AFFINIMIP® SPE
Selectivity	High	High
Capacity	6µmol/g	10-100µmol/g
Analyte recognition in water	Good	Variable
Analyte recognition in Organics	Poor	Good
Stability	Poor	Very High
Reproducibility	Variable	Good
Cost	Expensive	Inexpensive

Compared to IAC, AFFINIMIP® SPE provides:
Easier and faster protocol
Lower dilution
Easier automatisation

(Cf. Automated method for the selective SPE of Ochratoxin A from wheat Using Molecularly Imprinted Polymer; Gilson Application Notes Handbook 2011; volume 1 Issue 4)

PROTOCOL: Zearalenone (ZON) from maize flour

Step	Vicam IAC	AFFINIMIP®SPE ZON
Extraction of target analyte	25g sample in 100mL 90/10 Methanol/water Blender 3 minutes + filtration	25g sample in 100mL 75/25 ACN/water Blender 3 minutes + filtration
Preparation loading solution	4mL extract + 96mL water	10mL extract + 10mL Water
Loading	100mL Loading solution	8mL Loading solution
Washing	20mL Water	4mL 2/58/40 Acetic acid / water / ACN
Elution	1.5mL Methanol	2mL 98/2 Methanol/Acetic acid
Protocol time	55min	30min

PROTOCOL: Ochratoxin A (OTA) from wheat flour

Step	Vicam IAC	AFFINIMIP®SPE OTA
Extraction of target analyte	50g sample in 100mL 60/40 ACN/water Blender 1 minute + filtration	
Preparation loading solution	10mL extract + 40mL PBS	10mL extract + 10mL HCl 0.1M pH=1
Loading	10mL Loading solution	4mL Loading solution
Washing	10mL PBS 10mL Water	7mL 60/40 HCl 0.1M pH=1/ACN
Elution	1.5mL Methanol	2mL 98/2 Methanol/Acetic acid
Protocol time	30min	20min

CHROMATOGRAM ASPECT → Equivalent chromatograms

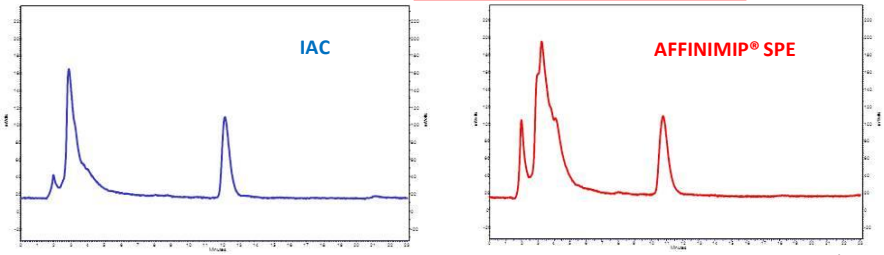

Figure 1. Chromatogram of Maize sample spiked with Zearalenone at 85 µg/kg obtained after cleanup by AFFINIMIP®SPE Zearalenone (red) or Vicam IAC (blue).

RECOVERIES → Higher Recoveries obtained with AFFINIMIP® SPE

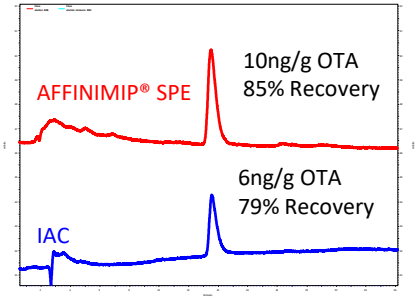

Figure 2. Chromatogram of wheat sample spiked with Ochratoxin A obtained after cleanup by AFFINIMIP®SPE Zearalenone (red, spiked at 10ng/g) or Vicam IAC (blue, spiked at 6ng/g).

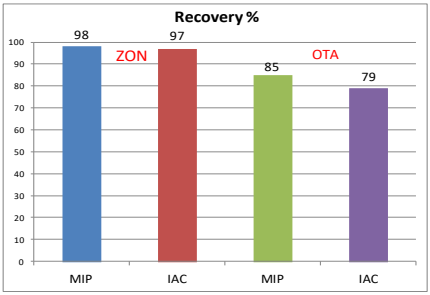

Figure 3. Recovery of Ochratoxin A or Zearalenone obtained after cleanup by AFFINIMIP®SPE or Vicam IAC.

CAPACITY → Capacity MIP > Capacity IAC

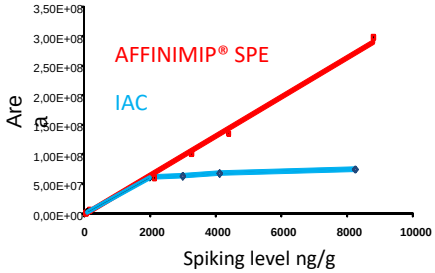

Figure 4. Comparison of capacity between AFFINIMIP®SPE Zearalenone (red) and Vicam IAC (blue).

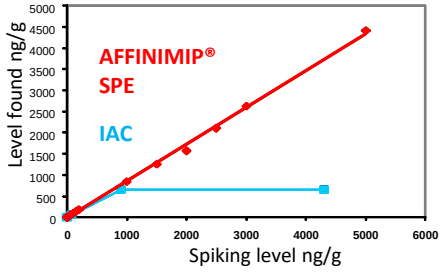

Figure 5. Comparison of capacity between AFFINIMIP®SPE OTA (red) and Vicam IAC (blue).