AFFINILUTE™ MIP

Molecularly
Imprinted Polymers

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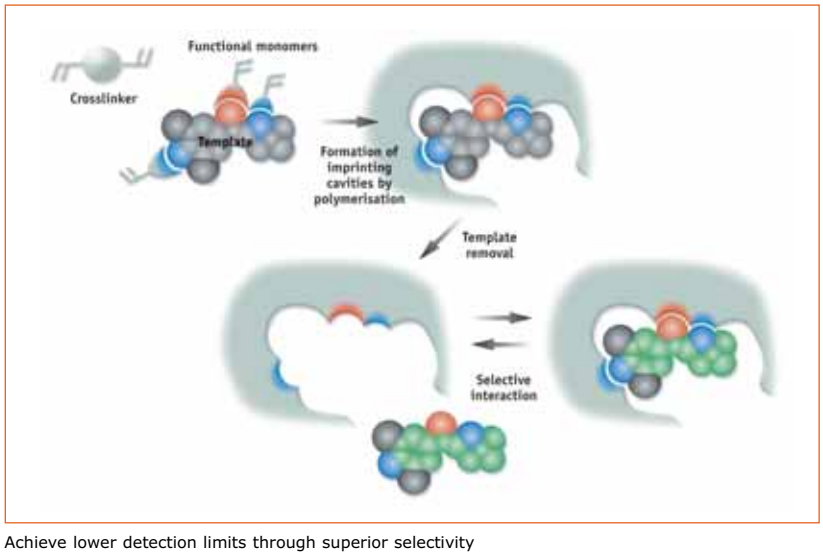
Biotage AFFINILUTE™ MIP products offer analytical chemists ultimate selectivity compared with standard solid phase extraction techniques. Unlike other methods, Biotage AFFINILUTE MIP products rely on the specific molecular structure of the analyte for targeted capture resulting in exceptional clean up. Biotage AFFINILUTE MIP columns combine high affinity with standard flow through sample preparation methodology.

AFFINILUTE MIP columns contain **M**olecularly **I**mprinted **P**olymers (MIPs) which are a class of highly cross-linked polymers engineered to bind one target compound or a class of structurally related target compounds with high selectivity. This selectivity is introduced during MIP synthesis in which a template molecule, designed to mimic the analyte, guides the formation of specific cavities or imprints that are sterically and chemically complementary to the target analyte(s).

MIPs are prepared by first mixing a template molecule that consists of a structural analog of the analyte(s) of interest with one or more functional monomers. The monomers form spontaneous complexes around the template. Upon complex formation, cross-linking monomers are then added with a suitable porogen (solvent that aids in the role in pore formation) to drive polymerization. An extensive wash procedure is used to remove the template from the polymer, leaving imprints or binding sites that are sterically and chemically complementary to the template.

The very specific selectivity designed into each AFFINILUTE MIP ensures high affinity binding even of rare analytes in large sample volumes, thus lowering limits of detection.



Achieve lower detection limits through superior selectivity

Minimize ion-suppression

AFFINILUTE MIPs are so selective that stringent wash steps can be applied prior to analyte elution in order to remove all interferences and thus minimize matrix effects.

Minimal to no method development required

Each box of AFFINILUTE MIP product contains a detailed application note/method card that in most cases will require no further optimization as Biotage have optimized the method during polymer development.

Stable at broad pH ranges and high temperatures

AFFINILUTE MIPs are highly cross linked polymers that can withstand extremes of pH and temperature allowing for stringent elution interference washes and extended shelf life.

AFFINILUTE MIP Amphetamines

One of the difficulties of analyzing amphetamines is the short half-life of the drug once ingested such that testing by conventional methods needs to occur within 48 hours of ingestion. The class selectivity of AFFINILUTE MIP Amphetamines allows for amphetamine detection up to 5 days after intake. Additionally, the class selectivity will allow for the capture of "designer drugs" based on the amphetamine core structure.

Description	Quantity	Part number
AFFINILUTE MIP Amphetamines 25 mg/3 mL	50	M28-0002-B

AFFINILUTE MIP β-agonists

β-2-adrenergic receptor agonists (β-agonists) have been internationally banned in human and equine sports in addition to being prohibited for non-veterinary use in livestock. After therapeutic use, these drugs are not completely metabolized and are often excreted in wastewaters. As a result, there is concern for the long-term chronic effects of these drugs on humans and the ecosystem.

Description	Quantity	Part number
AFFINILUTE MIP Full β-agonist 25 mg/10 mL	50	M02-0002-G
AFFINILUTE MIP Full β-agonist 25 mg/3 mL	50	M02-0002-B

AFFINILUTE MIP β-blockers

β-adrenergic blocking agents (β-blockers) are a class of drugs used to treat various cardiac disorders such as hypertension, angina, congestive heart failure and arrhythmia. β-blockers have been used to enhance performance by athletes by lowering heart rate and reducing tremor and as such, the International Olympic Committee has banned the use of β-blockers. The application note for AFFINILUTE MIP β-blockers describes the extraction of β-blockers from urine and other biological fluids, as well as water.

Description	Quantity	Part number
AFFINILUTE MIP β-blockers 25 mg/10 mL	50	M18-0002-G
AFFINILUTE MIP β-blockers 25 mg/3 mL	50	M18-0002-B

AFFINILUTE MIP Clenbuterol

Clenbuterol is a non-steroidal β2 adrenergic agonist (β-receptor) used as a decongestant and bronchodilator in the treatment of respiratory disorders (e.g. asthma). Like all β-receptors, its use in food chain livestock is internationally banned. The application note for AFFINILUTE MIP Clenbuterol describes the extraction of clenbuterol from calf urine. Please note that this product is specific for clenbuterol, to capture the entire family of β-agonists, please see the section relating to AFFINILUTE MIP β-agonists above.

Description	Quantity	Part number
AFFINILUTE MIP Clenbuterol 25 mg/10 mL	50	M01-0002-G

AFFINILUTE MIP Chloramphenicol

Chloramphenicol is a broad spectrum antibiotic that may be a causative agent for aplastic anemia and certain cancers. As a consequence, the use of chloramphenicol in food-producing livestock has been banned in Europe, the US and Canada. Chloramphenicol however, is still widely available in many food producing countries and because no safe levels have been determined in food, public health concerns still arise. As such, a "zero" tolerance level has been established for this antibiotic in foodstuffs. It is therefore critical to develop highly selective and sensitive analytical assays to monitor chloramphenicol residues in difficult matrices such as foods. The application note for AFFINILUTE MIP Chloramphenicol describes the extraction of chloramphenicol from milk and plasma.

Description	Quantity	Part number
AFFINILUTE MIP Chloramphenicol 25 mg/10 mL	50	M10-0002-G
AFFINILUTE MIP Chloramphenicol 25 mg/3 mL	50	M10-0002-B

AFFINILUTE MIP Nitroimidazoles

Nitroimidazole antibiotics are used to treat anaerobic bacterial and parasitic infections in animals. Whilst prohibition/legislation varies from state to state, there are restrictions on the use of these compounds in food livestock and permitted levels in food for human consumption. The application note for AFFINILUTE MIP Nitroimidazoles describes the extraction of nitroimidazoles from solid tissue samples and liquid samples.

Description	Quantity	Part number
AFFINILUTE MIP Nitroimidazoles 50 mg/3 mL	50	M34-0005-B

AFFINILUTE MIP PAH

Polycyclic aromatic hydrocarbons (PAHs) are chemical compounds containing fused aromatic rings. The health hazard of PAHs depends on structure and in particular isomeric form, ranging from non-toxic to extremely toxic and carcinogenic. PAHs can be found in foods, where studies have shown that most food intake of PAHs comes from cereals, oils and fats. The application note for AFFINILUTE MIP PAH describes the extraction of nine of the most toxic PAHs from olive oil: fluoranthene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, indeno(123-cd)pyrene, dibenzo(ah)anthracene, and benzo(ghi)perylene.

Description	Quantity	Part number
AFFINILUTE MIP PAH 25 mg/3 mL	50	M73-0002-B

AFFINILUTE MIP NSAIDs

Nonsteroidal anti-inflammatory drugs (NSAIDs) are analgesic and antipyretic (fever-reducing) agents which at higher doses also have anti-inflammatory effects. The most common members of this group of drugs are aspirin, ibuprofen and naproxen which are widely available as over-the-counter drugs in many areas. This widespread availability can lead to toxicity (both intentional and unintentional), hence accurate extraction and analysis is often required in clinical and forensic testing laboratories. Biotage have developed an application note for AFFINILUTE MIP NSAIDs that describes the extraction of NSAIDs from solid tissue as well as liquid samples.

Description	Quantity	Part number
AFFINILUTE MIP NSAIDs 25 mg/3 mL	50	M72-0002-B
AFFINILUTE MIP NSAIDs 25 mg/10 mL	50	M72-0002-G

AFFINILUTE MIP Fluoroquinolones

Fluoroquinolones are a family of synthetic broad-spectrum veterinary antibiotics, which are on the US EPA list for required testing of all imported foodstuffs. The application note for AFFINILUTE MIP Fluoroquinolones describes the extraction of fluoroquinolones specifically from bovine kidney and is applicable to many tissues for food testing.

Description	Quantity	Part number
AFFINILUTE MIP Fluoroquinolones 25 mg/3 mL	50	M69-0002-B

AFFINILUTE MIP TSNAs

Tobacco-specific nitrosamines (TSNAs) are created through the burning, curing and fermentation of tobacco leaf. In 1989, the US Surgeon General provided a list of carcinogens found in tobacco products. Among that list were nine nitrosamines that can be found in chewing, smoking and snuff tobacco. These TSNAs are highly carcinogenic and have been linked to lung, oral, esophageal, cervical and liver cancer. The monitoring of humans for exposure to tobacco smoke (active or passive) is an important clinical test. Nicotine is metabolized in the tobacco curing process to the TSNAs NNK and NNN; NNK is further metabolized in the body to NNAL. Because TSNAs are only found in tobacco products, their characterization is invaluable in the study of tobacco's cancerous nature. The application note for AFFINILUTE MIP TSNAs describes the extraction of TSNAs from urine.

Description	Quantity	Part number
AFFINILUTE MIP TSNAs 50 mg/10 mL	50	M21-0005-G
AFFINILUTE MIP TSNAs 50 mg/3 mL	50	M21-0005-B

AFFINILUTE MIP NNAL

NNK (4-(methylnitrosamino)-1-(3-pyridyl)-1-butanone) is a tobacco specific nitrosamine which is present in significant quantities in tobacco smoke. Upon inhalation (both passive and active) NNK is rapidly metabolized to NNAL (4-(methylnitrosamino)-1-(3-pyridyl)-1-butanol). The extraction and quantification of NNAL in urine is therefore a useful biomarker when assessing exposure to tobacco smoke. The analysis of NNAL however is challenging due to the detection limits required, especially in the monitoring of nonsmokers exposed to passive smoking where detection limits are below 10 ng/L (<10 ppt). Such detection limits are not obtainable using conventional SPE and procedures are often laborious and time-consuming. The application note for AFFINILUTE MIP NNAL describes the extraction of NNAL from urine with detection limits down to 5 pg/mL and recoveries of greater than 90%.

Description	Quantity	Part number
AFFINILUTE MIP NNAL 25 mg/10 mL	50	M06-0002-G
AFFINILUTE MIP NNAL 25 mg/3 mL	50	M06-0002-B

AFFINILUTE MIP Triazines

Triazine compounds are used as the basis for various herbicides. AFFINILUTE MIP Triazine provides excellent extraction and selectivity for a spectrum of 10 triazines enabling lower detection limits with lower sample volumes. The 10 triazines and triazine metabolites that can be extracted are; atrazine, simazine, propazine, cyanazine, sebuthylazine, deisopropylatrazine, deethylatrazine, deethylterbutylazine, prometon and hydroxyterbutylazine.

Description	Quantity	Part number
AFFINILUTE MIP Triazines 25 mg/10 mL	50	M08-0002-G


EVOLUTE ABN 25mg Fixed Well Plate
VacMaster - 96