



NEW!



LC-MS/MS ANALYSIS OF SULFONAMIDES RESIDUE in MILK, MEAT, HONEY and FISH

Jasem® Method: Accuracy – High Speed – Simplicity in New Dimensions !

® Patent pending

Sulfonamides belong to a large and important class of antibacterial drugs and are very common in veterinary and human medicine. Sulfonamides are illegally used as additives in animal feed because they may have a growth-promoting effect. Sulfonamides generate potentially serious problems in human health, such

as allergic or toxic reactions. Furthermore, the main risk from the excessive use of antimicrobials in animals is that bacteria may develop resistance. In addition, some sulphonamides have been found to be potentially carcinogenic and this fact has become a cause for considerable debate in food safety.

Sulfonamide antibiotics:

Sulfathiazole,

Sulfaquinoxaline,

Sulfapyridine,

Sulfamethoxazole,

Sulfamethazine,

Sulfameter-ISTD,

Sulfamerazine,

Sulfadoxin,

Sulfadimethoxin,

Sulfadiazin,

Sulfachloropyridazine.

Extracted ion chromatogram of 25ppb sulfonamides mix spiked milk sample

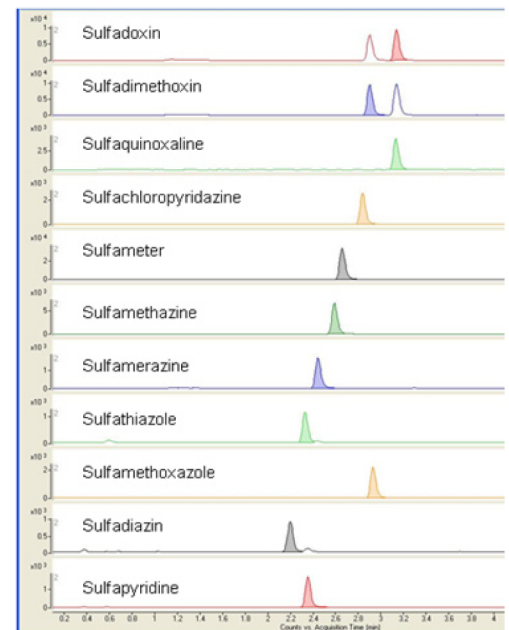
Features of Jasem® method

- Very easy sample preparation
- No need for SPE or Liquid extraction
- Short run time
- Preventing source contamination

Benefits & Advantages of Jasem® method

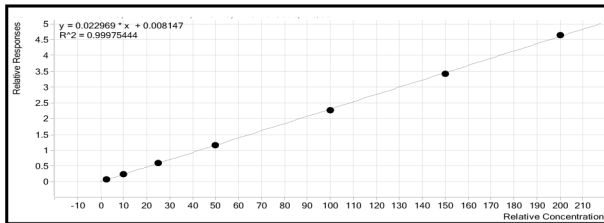
No SPE cleaning before:

- Fast and easy sample preparation
- Lower cost of sample preparation step
- More accurate results, lower RSD typically lower than 2%
- Shorter run time
- More selective than standard methods

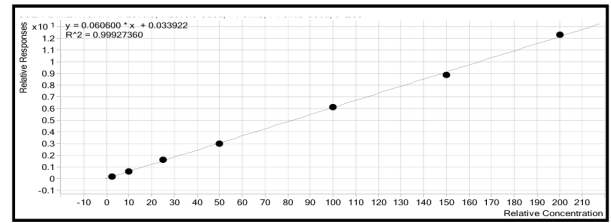


JASEM LABORATUVAR SİSTEM VE ÇÖZÜMLERİ SANAYİ VE TİCARET A.Ş.

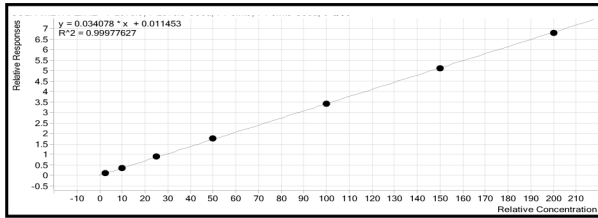
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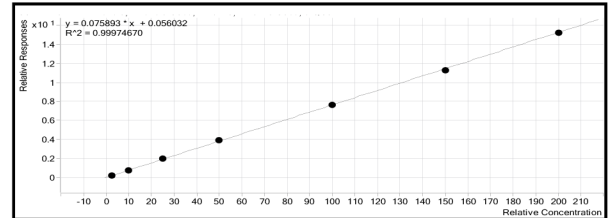
Sulfadiazin calibration curve from 2.5ppb to 200ppb



Sulfamethoxin calibration curve from 2.5ppb to 200ppb



Sulfamethazine calibration curve from 2.5ppb to 200ppb



Sulfadoxin calibration curve from 2.5ppb to 200ppb

Compound	Milk			Honey			Cattle meat			Chicken meat		
	R2	LOQ (ppt)	LOD (ppt)	R2	LOQ (ppt)	LOD (ppt)	R2	LOQ (ppt)	LOD (ppt)	R2	LOQ (ppt)	LOD (ppt)
Sulfadiazin	0.9997	14	5	0.9997	41	13	0.9991	29	10	0.9994	55	18
Sulfathiazole	0.9994	11	4	0.9997	132	44	0.9992	24	8	0.9996	13	4
Sulfapyridine	0.9990	18	6	0.9992	150	50	0.9992	8	3	0.9998	4	1
Sulfamerazine	0.9993	35	12	0.9996	56	18	0.9994	6	2	0.9994	66	22
Sulfamethazine	0.9997	39	13	0.9996	27	9	0.9992	23	8	0.9995	13	4
Sulfachloropyridazine	0.9997	26	9	0.9996	148	49	0.9995	13	4	0.9993	60	20
Sulfadoxin	0.9997	15	5	0.9994	28	9	0.9993	76	25	0.9991	51	17
Sulfamethoxazole	0.9992	82	27	0.9996	69	23	0.9991	77	26	0.9988	88	29
Sulfaquinoxaline	0.9992	75	25	0.9994	70	23	0.9991	55	18	0.9993	35	12
Sulfadimethoxine	0.9992	12	4	0.9997	28	9	0.9994	24	8	0.9993	37	12

Cattle and Poultry Meat

Present Reference Method: AOAC (Association of Official Analytical Chemists) Official Method 983.31 "Sulfonamide Residues in Animal Tissues". This method is Thin-Layer Chromatographic Screening by fluorescence densitometer method with more than 2 hours sample preparation time and approximately 2 hours for chromatographic conditions.

Jasem® Method: Only 20 minutes sample prep time and 6.5 minutes LC-MS/MS run time!

Milk

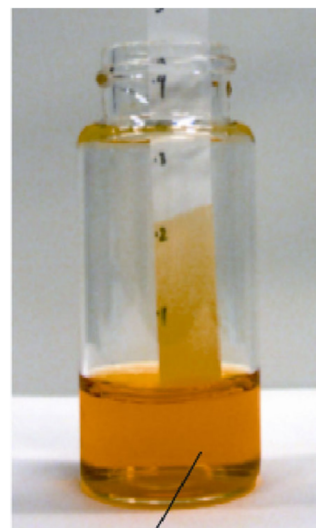
Present Reference Method: AOAC (Association of Official Analytical Chemists) Official Method 993.32 "Multiple Sulfonamide Residues in Raw Bovine Milk". This method is Liquid Chromatographic Method with more than 1 hour sample preparation time and 40 minutes HPLC run time.

Jasem® Method: Only 5 minutes sample prep time and 6.5 minutes LC-MS/MS run time!

Honey

Present Reference Method: Journal of AOAC International, 2002, Vol.85, No.4 "Quantitative LC/MS-MS Determination of Sulfonamides and Some Other Antibiotics in Honey". This method is LC-MS/MS Method with more than 1 hour sample preparation time and 19 minutes run time.

Jasem® Method: Only 15 minutes sample prep time and 6.5 minutes LC-MS/MS run time!



Why is all over the world medical interest in Sulfonamides so rapidly growing ?

The milk and dairy products industries are among the sectors most affected by the presence of antibiotic residues, not only because of the risk of chemical poisoning, allergic reactions, and the development of mechanisms of bacterial resistance, causing a serious threat to human and animal health, but also because of important economic losses derived by the inhibitory effect of these biocides in the fermentation processes (production of cheese and cultured milk products)*. Honey bee larvae are susceptible to American foulbrood (AFB) or European Foulbrood (EFB), disease caused by the organism *Streptococcus pluton* bacteria and *Paenibacillus* (*Bacillus*) larvae, respectively, which can devastate hives. Sulfonamides are relatively stable chemotherapeutics known to control this disease but they are not permitted to use for this purpose in most countries because of the potential of sulfonamide residues to contaminate honey.

Maximum Residue Limits (MRLs) have been established for sulfonamide compounds in food of animal origin, but not in honey: in the European Union it means that honey containing antibiotic residues is not permitted to be sold. European Union, Canada and USA regulations have set the MRLs (maximum residue limits) of total sulfonamides of 100µg kg⁻¹ (ppb) in milk and 100µg kg⁻¹ (ppb) in edible tissues.

* *Conzuelo, F. et. al.,
Biosensors &
Bioelectronics,
Vol. 36, 81-88.
(2012),*

Note

*Regulatory Label
Consideration*