

CAMAG APPLICATION NOTES ARRANGED IN CLASSIFICATION SECTIONS

I Quantitative Determinations

1. Biochemical Research / Biotechnology

- A-11.4 - DANS-amino acids
- A-51.1 - Methionine (in fermentation broth)
- A-52.3 - Phospholipids (AMD)
- A-61.1 - Separation of gangliosides (AMD)
- A-76.1 - Rape seed oil in fermentation broth

2. Clinical

- A-01.4 - Carbamazepine and two of its metabolites in serum
- A-04.2 - Diazepam trace analysis of by-products in the ppm range *
- A-11.4 - DANS-amino acids
- A-21.1 - Inorganic and organic mercury in water and human serum *
- A-22.2 - Estriol in serum during pregnancy
- A-23.1 - Lecithin (LEC) and sphingomyelin in amniotic fluid (L/S ratio)
- A-24.2 - Cortisol in serum
- A-26.2 - Selenium in water and serum
- A-31.1 - Chloramphenicol in serum (micro method) *
- A-32.1 - Trazodone in serum *
- A-33.1 - Quinidine in serum *
- A-34.1 - Triamterene in serum *
- A-37.1 - Captopril in urine and plasma
- A-38.1 - Melleril and its metabolites in urine
- A-39.2 - Hippuric acid in urine
- A-40.1 - Disopyramide in serum *
- A-42.2 - Anticonvulsants in serum
- A-43.2 - Hydrochlorothiazide (Esidrex) in urine
- A-44.1 - Caffeine in urine
- A-45.1 - Free chlorpromazine and its metabolites in urine
- A-46.3 - Furosemide (Lasix) in urine
- A-47.3 - Chlortalidone (Hygroton) in urine
- A-48.3 - Atenolol (Tenormin) in urine

- A-49.3 - Pemoline in urine
- A-52.3 - Phospholipids (AMD)
- A-54.1 - Benzodiazepines in urine
- A-55.2 - Clenbuterol in meat and urine of livestock
- A-56.1 - Phenylbutazon in plasma
- A-57.1 - Morphine and monoacetylmorphine in human hair
- A-61.1 - Separation of gangliosides (AMD)
- A-72.1 - Ornidazole in plasma

3. Cosmetics

- A-15.5 - p-Hydroxybenzoic acid, its esters and 4-methoxycinnamic acid derivatives
- A-74.1 - Hydrocortisone and cinchocaine in lanolin ointment

4. Environmental Analysis

- A-21.1 - Inorganic and organic mercury in water and human serum *
- A-26.2 - Selenium in water and serum
- A-28.7 - Pesticides in drinking water (AMD)
- A-75.1 - 6 PAHs in contaminated mineral substances

5. Food Analysis

- A-03.4 - Diethylstilbestrol in veal and urine of fattened calves *
- A-07.3 - Mono-, di-, tri- and polysaccharides
- A-10.5 - Vitamin C in fruit juice
- A-12.4 - Aflatoxins B1, B2, G1 and G2 in foodstuffs
- A-13.3 - Caffeine in food *
- A-17.2 - Aflatoxin M1 in milk and milk products *
- A-18.2 - Glycyrrhizic acid in liquorice *
- A-25.2 - Lactose, saccharose and fructose/glucose
- A-30.3 - Cyclopiazonic acid in foodstuffs
- A-35.1 - Anabolica in meat and urine (AMD)
- A-36.1 - Cholesterol in fat emulsions (AMD)
- A-41.3 - Glycerol in tobacco
- A-52.3 - Phospholipids (AMD)
- A-55.2 - Clenbuterol in meat and urine of livestock
- A-63.1 - Quinolonic antibiotics in fish and fish feed
- A-78.2 - Organic acids in wine

- A-81.2 - Oligosaccharides from molasses
- A-83.1 - Determination of sucralose and fructose in food and beverages
- A-88.1 - Determination of melamine in milk by HPTLC

6. Pharmaceutical and chemical substances

- A-04.2 - Diazepam trace analysis of byproducts in the ppm range *
- A-09.2 - Clopamide in an antihypertensive *
- A-14.4 - Acetylsalicylic acid, salicylic acid, and salicyl amide
- A-15.5 - p-Hydroxybenzoic acid, its esters and 4-methoxycinnamic acid derivatives
- A-16.2 - Paracetamol, amobarbital, codeine phosphate and caffeine in tablets and suppositories *
- A-20.3 - Trimethoprim (TMP) and sulfamethoxazole (SMZ) from cotrimoxazole (antibiotic)
- A-25.2 - Lactose, saccharose and fructose/glucose
- A-27.4 - Vitamin B1 in pharmaceutical products
- A-29.3 - Sulfonamides and tetracyclines in animal feed (AMD)
- A-36.1 - Cholesterol in fat emulsions (AMD)
- A-51.1 - Methionine (in fermentation broth)
- A-52.3 - Phospholipids (AMD)
- A-65.2 - Content Uniformity Test of Diclofenac-Na (Voltaren)
- A-66.1 - Diflubenzuron in needles and leaves
- A-77.2 - Impurities in K acid
- A-82.1 - Impurities in Bupropion Hydrochloride

7. Natural Products, Plant Ingredients

- A-12.4 - Aflatoxins B1, B2, G1 and G2 in food
- A-18.2 - Glycyrrhizic acid in liquorice *
- A-30.3 - Cyclopiazonic acid in foodstuffs
- A-52.3 - Phospholipids (AMD)
- A-59.1 - β -Sitosterol and β -sitosterolglucoside
- A-66.1 - Diflubenzuron in needles and leaves
- A-67.1 - Essential oils in herbal drugs
- A-68.2 - Glycosides in herbal drugs
- A-69.2 - Hypericin in Valena N extract with St. John's Wort
- A-70.1 - Caffeine in Guarana Cofertan extract
- A-71.1 - Caffeic acid in herbal drugs
- A-73.1 - Actein in *Cimicifuga racemosa* rhizome

- A-84.1 - Determination of tetrandrine in Han fangji (*Stephania tetrandra*) by HPTLC
- A-86.1 - Determination of artemisinin in *Artemisia annua* leaf by HPTLC
- A-87.1 - Determination of aucubin and catalpol in leaves of Ribwort Plantain (*Plantago lanceolata*) by HPTLC

8. Toxicology, Forensic Analysis

- A-04.2 - Diazepam trace analysis of by-products in the ppm range *
- A-12.4 - Aflatoxins B1, B2, G1 and G2 in food
- A-30.3 - Cyclopiazonic acid in foodstuffs
- A-57.1 - Morphine and monoacetylmorphine in human hair
- A-60.3 - Drug screening by instrumental qualitative thin-layer chromatography
- A-62.1 - Ball pen inks (AMD)
- A-64.5 - Carcinogenic amines as degradation products of textile azo dyes (AMD)
- A-79.1 - Allergenic disperse dyes in textiles
- A-80.1 - Carcinogenic amines as degradation products of azo-dyes in leather

9. Doping Analysis

- A-43.2 - Hydrochlorothiazide (Esidrex) in urine
- A-44.1 - Caffeine in urine
- A-46.3 - Furosemide (Lasix) in urine
- A-47.3 - Chlortalidone (Hygroton) in urine
- A-48.3 - Atenolol (Tenormin) in urine
- A-49.3 - Pemoline in urine
- A-50.3 - Oxprenolol in blood
- A-54.1 - Benzodiazepines in urine
- A-55.2 - Clenbuterol in meat and urine of livestock
- A-56.1 - Phenylbutazon in plasma

10. Metallurgy, electroplating

- A-53.1 - m-Nitrobenzoic acid for monitoring the quality of nickel stripper baths

* These Application Notes were developed some time ago with equipment that is no longer state-of-the-art. However, as a guideline for the analytical procedure they are still useful.

II Fingerprint Analysis/Screening

- F-01 - HPTLC Fingerprint of Valerian (*Valeriana officinalis*)

- F-02 - HPTLC Fingerprint of Wuweizi berries (*Schisandra chinensis*)
- F-03 - HPTLC Fingerprint of Hawthorn leaves & flowers (*Crataegus sp.*)
- F-04 - HPTLC Fingerprint of *Astragalus* and *Hedysarum*
- F-05 - HPTLC Fingerprint of Cramp Bark (*Viburnum opulus*) and Black Haw (*V. prunifolium*)
- F-06A - HPTLC Fingerprint of Garlic (*Allium sativum*) - Alliin
- F-06B - HPTLC Fingerprint of Garlic (*Allium sativum*) - Allicin
- F-07 - HPTLC Analysis of salicylic acid derivatives from Willow bark (*Salix sp.*)
- F-08 - HPTLC Fingerprint of Ashwaganda (*Withania somnifera*)
- F-09 - HPTLC Fingerprint of Reishi mushrooms (*Ganoderma lucidum*)
- F-10A - HPTLC Fingerprint of Chaste tree fruits (*Vitex agnus-castus*) - Hydrophilic flavonoids
- F-10B - HPTLC Fingerprint of Chaste tree fruits (*Vitex agnus-castus*) - Lipophilic ingredients
- F-10C - HPTLC Fingerprint of Chaste tree fruits (*Vitex agnus-castus*) - Iridoids
- F-11 - HPTLC Fingerprint of Bearberry leaf (*Arctostaphylos uva-ursi*)
- F-12.1 - HPTLC Fingerprint of Common Horse tail (*Equisetum arvense*)
- F-13A - HPTLC Fingerprint of Black Cohosh (*Cimicifuga racemosa*) -Triterpene glycosides
- F-13B - HPTLC Fingerprint of Black Cohosh (*Cimicifuga racemosa*) -Plant acids
- F-14 - HPTLC Fingerprint of St. John's Wort (*Hypericum perforatum*)
- F-15 - HPTLC Fingerprint of Goldenseal (*Hydrastis canadensis*)
- F-16A - HPTLC Fingerprint of Ginkgo (*Ginkgo biloba*) - Ginkgolides
- F-16B - HPTLC Fingerprint of Ginkgo (*Ginkgo biloba*) - Flavonoids
- F-16C - HPTLC Fingerprint of Ginkgo (*Ginkgo biloba*) - Ginkolic acid
- F-17 - HPTLC Fingerprint of Bilberry (*Vaccinium myrtillus*)
- F-18 - HPTLC Fingerprint of Dang Gui (*Angelica sinensis*)
- F-19 - HPTLC Fingerprint of Feverfew (*Tanacetum parthenium*)
- F-20 - HPTLC Fingerprint of African prune bark (*Pygeum africanum*)
- F-21 - HPTLC Fingerprint of Han fangji (*Stephania tetrandra*)
- F-22A - HPTLC Fingerprint of Red Clover (*Trifolium pratense*) - Flavonoids
- F-22B - HPTLC Fingerprint of Red Clover (*Trifolium pratense*) - Formononetin
- F-22A - HPTLC Fingerprint of Red Clover (*Trifolium pratense*) - Flavonoids
- F-23 - HPTLC Fingerprints of Chinese plants with respect to aristolochic acids
- F-24A - HPTLC Fingerprint of Echinacea (*E. purpurea*, *E. pallida*, *E. angustifolia*) - Phenylpropanoids
- F-24B - HPTLC Fingerprint of Echinacea (*E. purpurea*, *E. pallida*, *E. angustifolia*) - Alkylamides
- F-25 - HPTLC Fingerprint of Kava (*Piper methysticum*)
- F-26A - HPTLC Fingerprint of Saw Palmetto (*Serenoa repens*) - Ph.Eur.4

- F-26B - HPTLC Fingerprint of Saw Palmetto (*Serenoa repens*) - fatty oils
- F-27 - HPTLC Fingerprint of Ribwort Plantain (*Plantago lanceolata*)
- F-28 - HPTLC Fingerprint of Lime flowers (*Tillia sp.*)
- F-29A - HPTLC Fingerprints for the Identification of Licorice (*Glycyrrhiza sp.*) - polar compounds
- F-29B - HPTLC Fingerprints for the Identification of Licorice (*Glycyrrhiza sp.*) - lipophilic compounds
- F-30 - HPTLC Fingerprint for the Identification of Eleuthero (*Eleutherococcus senticosus*)
- F-31 - HPTLC Fingerprint for the Identification of Asian Ginseng (*Panax ginseng*)
- F-32 - HPTLC Fingerprint for the Identification of American Ginseng (*Panax quinquefolium*)
- F-33 - HPTLC Fingerprint for the Identification of Notoginseng (*Panax notoginseng*)
- F-34 - Biological activity of berberine containing drugs by HPTLC-Bioluminescence
- F-35 - HPTLC detection of the azo dye amaranth as an adulterant of Bilberry extract
- F-36 - HPTLC Identification of Triphala (Mixture of *Terminalia chebula*, *Terminalia bellerica*, and *Phyllanthus emblica*)
- F-37 - HPTLC Identification of Fatty Oils
- F-38 - DPPH-HPTLC Screening