are polar, amphoteric compounds that are strongly adsorbed on silica gel. Therefore, silica gel plates for quinolone analysis are often impregnated with Na_2EDTA or K_2HPO_4. Multicomponent organic mobile phases are used, usually with the addition of aqueous solutions of ammonia or an acid. Densitometry or fluorescence densitometry is possible, sometimes preceded by postchromatographic derivatization.

Oxolinic acid was quantified in fish feed in the presence of erythromycin and oxytetracyline (82). TLC of oxolinic acid was done on HPTLC silica gel plates impregnated with 0.1 M K_2HPO_4 ethanolic solution. The mobile phase was chloroform–acetone (9:10). Spots were detected by scanning at 265 nm.

Oxolinic acid and flumequine were separated on HPTLC plates prepared as described above using toluene–ethyl acetate–90% formic acid (60:30:10) as solvent (83). The procedure was used for analysis of fish feed and for residual analysis of fish meat. Nalidixic acid was used as an internal standard. The sensitivity of detection of oxolinic acid could be increased ten-fold by derivatization with sulfuric acid–hydrochloric acid reagent before scanning.

High-performance TLC analysis was used for qualitative determination of seven quinolones —enrofloxacin, ciprofloxacin, danofloxacin, norfloxacin, flumequine, oxolinic acid, and nalidixic acid—in pork muscle (84). Extraction from the spiked tissues was followed by SPE on a C-8 cartridge. Then samples were spotted on HPTLC silica gel plates with a concentrating zone and developed with methanol–ammonia (85:15). The plate was dried and monitored under 312 nm light, sprayed with terbium chloride solution, heated for 5 min at 100°C, and monitored again under 312 nm light. The method was validated to a level of 15 ppb for enrofloxacin, ciprofloxacin, danofloxacin, and norfloxacin and 5 ppb for flumequine, oxolinic acid, and nalidixic acid.

A TLC procedure was established for qualitative and quantitative monitoring of the degradation of ciprofloxacin in aqueous solutions irradiated by a high-pressure mercury lamp (85). Qualitative TLC analysis was done using aluminum-backed silica gel 60 sheets. Mixtures of acetonitrile and various aqueous phases containing ammonia served as eluents. Quantitative experiments were done on silica gel HPTLC plates prewashed with methanol and developed with eluent comprising mixtures of acetonitrile and ammonium chloride buffer. The degradation products were easily separated from each other and from the parent compound.

An HPTLC method with direct fluorescence measurement for determination of norfloxacin on stainless steel pharmaceutical equipment surfaces was described (86). The marked surface was wiped with bands of cotton wet with 0.005 M NaOH in water–methanol (1:1). Norfloxacin was then extracted from the cotton with the same solution and spotted on an HPTLC silica gel plate prewashed with methanol. The plate was developed with methanol–chloroform–conc. ammonia (51:34:15), dried, then immersed for 4 h in liquid paraffin–*n*-hexane (1:2). The plate was scanned in the fluorescence/reflectance mode at 313 nm. The method was validated for the monitoring of norfloxacin at the allowed limit of 10 mg/m^2.

Fleroxacin, sparfloxacin, and cinoxacin in tablets were separated and determined by HPTLC on silica gel plates developed with dichloromethane–2-propanol–25% ammonia (4:5:2) (87). The compounds were completely separated with R_f values of 0.55, 0.46, and 0.40 for fleroxacin, sparfloxacin, and cinoxacin, respectively (Fig. 3). Tablets were extracted with chloroform, methanol, and methanol–acetone (1:1) for fleroxacin, sparfloxacin, and cinoxacin, respectively. Quantification was done by videodensitometry at 254 nm (Fig. 4). The calibration curves obtained by plotting peak area against drug concentration were linear in the range 0.08–0.48 μg/μL (corresponding to 0.4–2.4 μg per band). Detection by UV irradiation was compared with other methods (see Table 6).

Six chinolones used in veterinary therapy, i.e., ciprofloxacin, enrofloxacin, difloxacin, sarafloxacin, norfloxacin, and flumequine, were separated on diol-HPTLC plates in an ion-association system with di(2-ethylhexyl)orthophosphoric acid (HDEHP, an ion-pairing agent) (88). Chromatograms were developed with solutions of HDEHP (1%, 2.5%, 5%) in acetone, with solutions of HDEHP (5%, 10%, 15%) in ethyl acetate, and with ethyl acetate–HDEHP–methanol (9:1:1.25). The spots were detected under UV light at 254 nm.

Wang et al. (89) described a TLC-fluorescence densitometry method for the determination of norfloxacin, pefloxacin, and ciprofloxacin on silica gel plates impregnated with Na_2EDTA. The