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Appendix

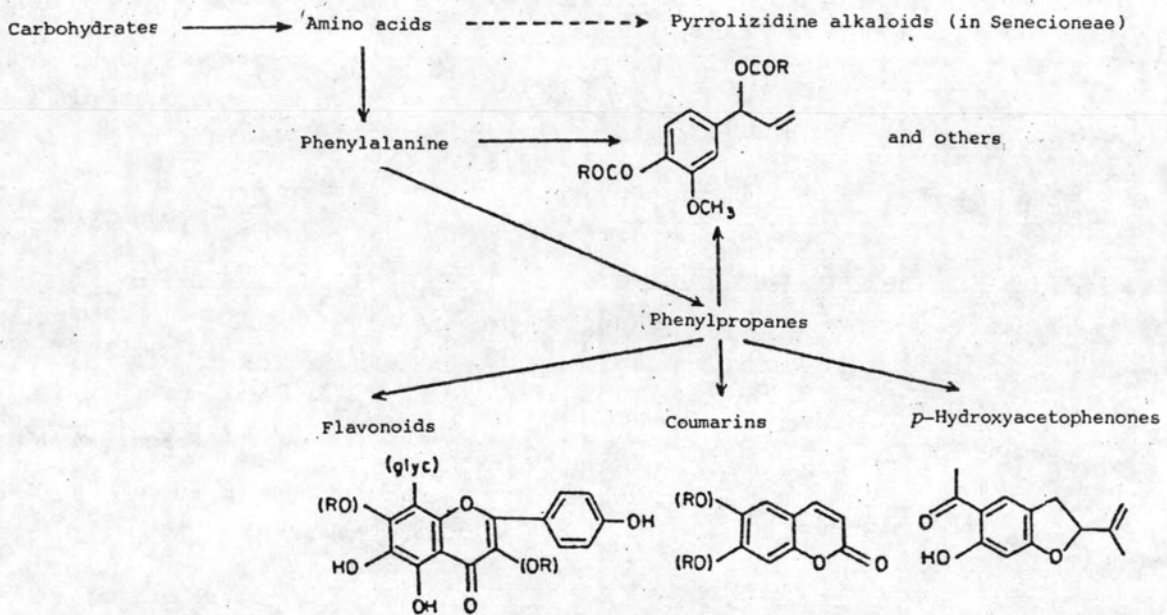
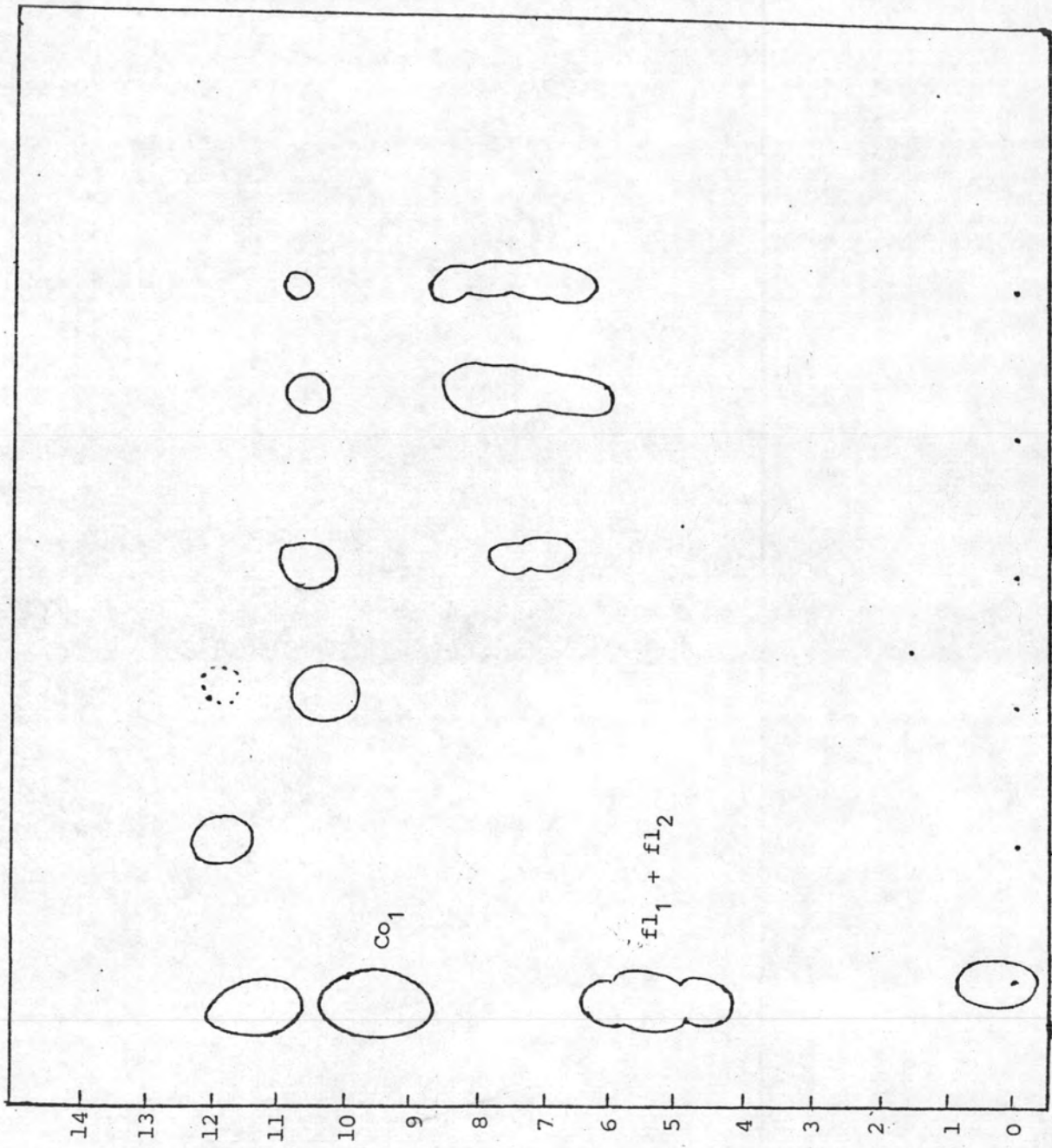


Figure 14 Major pathways to natural products of the Compositae which amino acid is the precursor (Mabry and Bohlmann, 1977).

Silica gel G/ chloroform : acetone (9:1)



crude extract A B C C C C

Figure 15 Thin layer chromatogram of crude extract

Silica gel G/ 10% acetone in diethyl ether

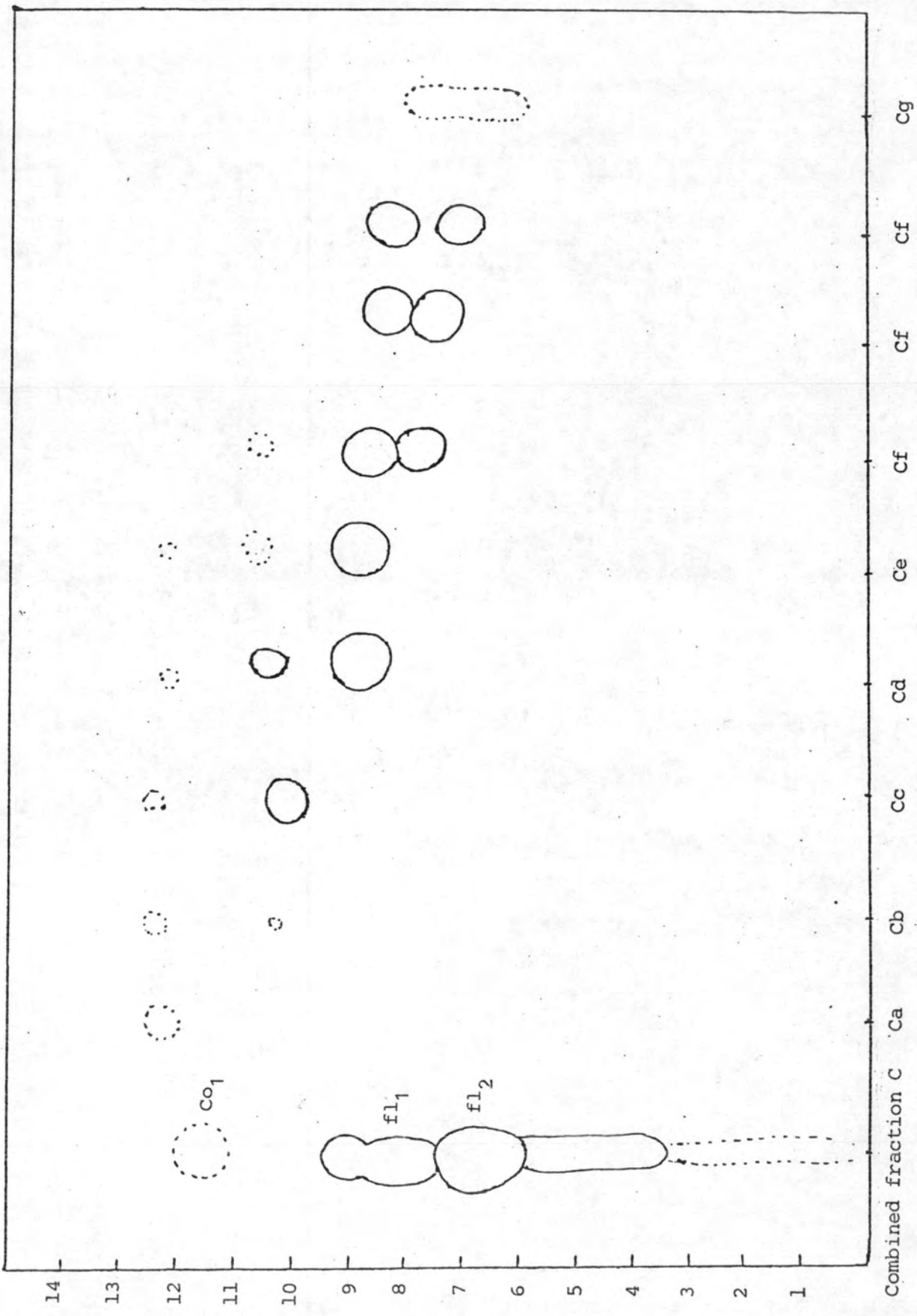


Figure 16 Thin layer chromatogram of crude extract from combined fraction C

Silica gel G/ diethyl ether

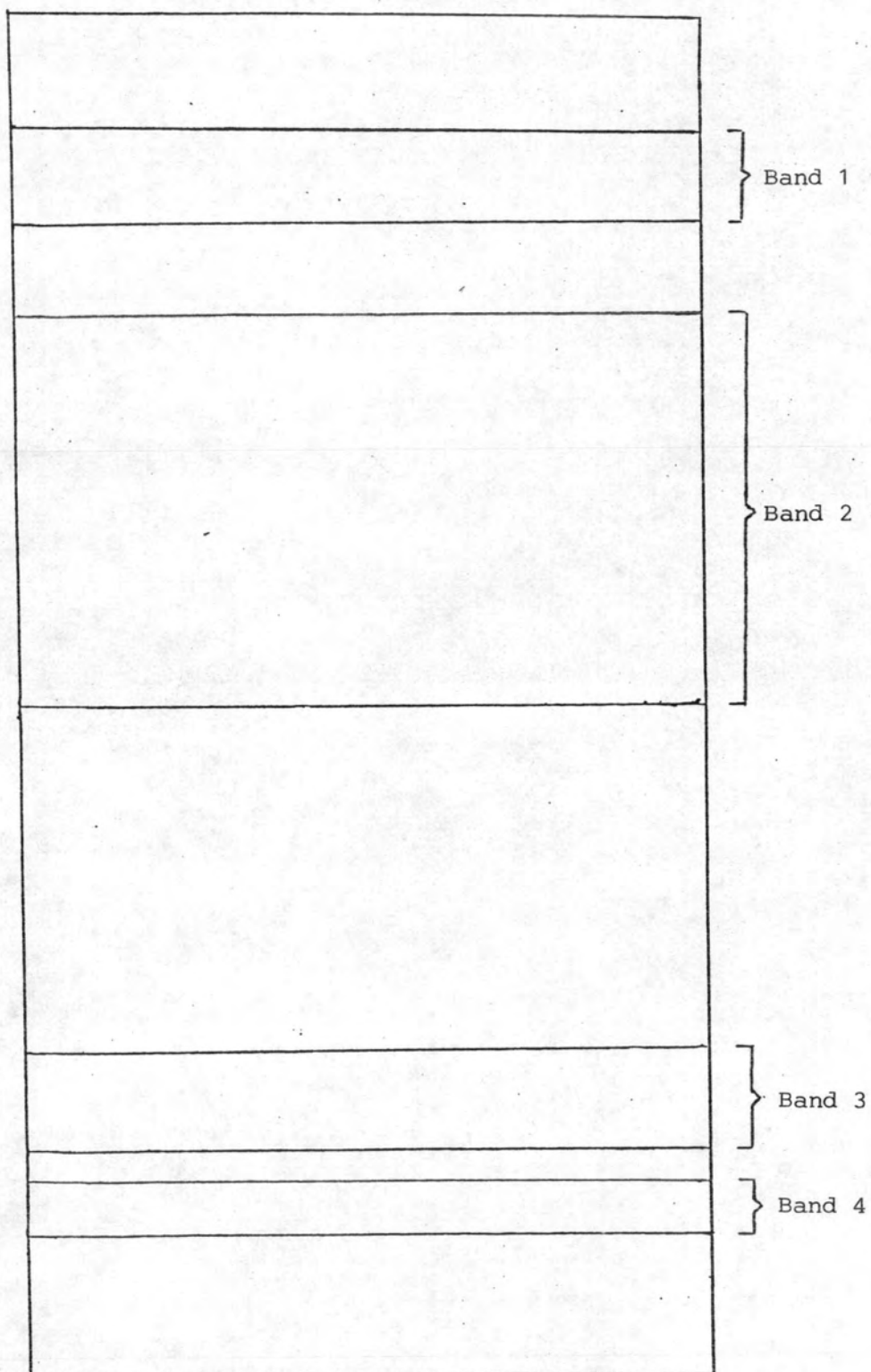


Figure 17 Preparative thin layer chromatogram of fraction Cf



Silica gel G/ diethyl ether

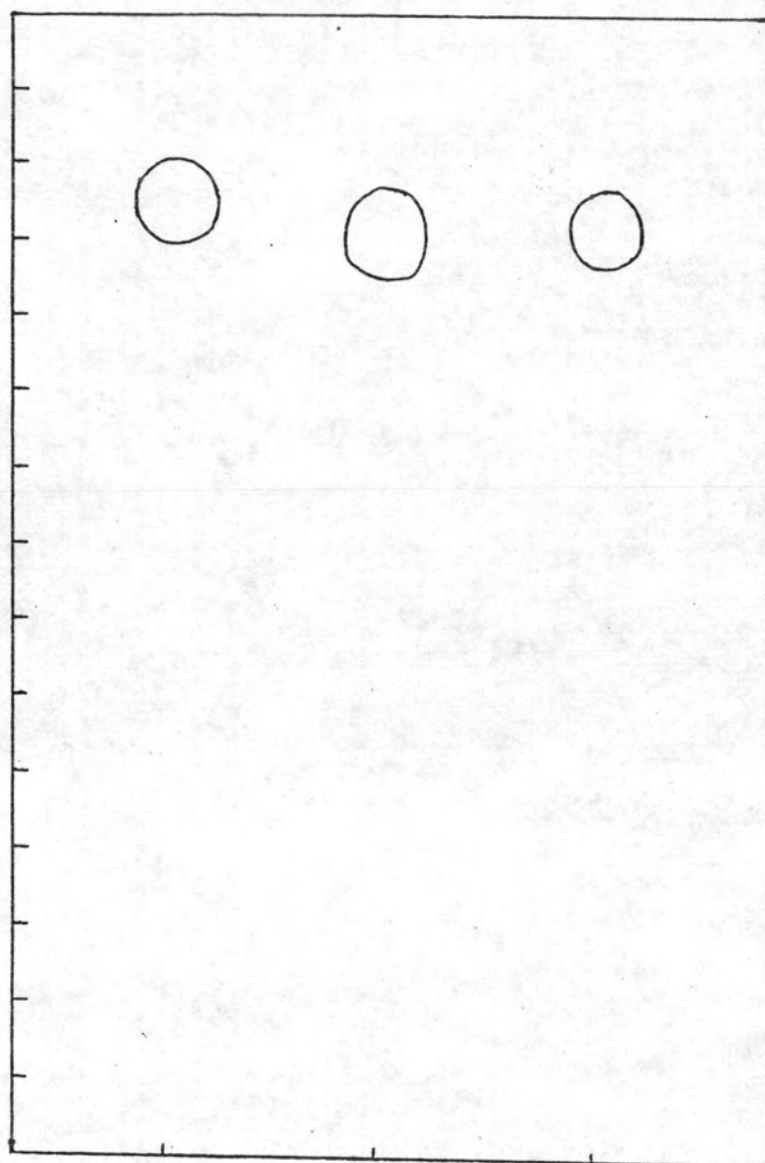


Figure 18 Thin layer chromatogram of Co_1

Silica gel G/ petroleum ether : diethyl ether (1:2)

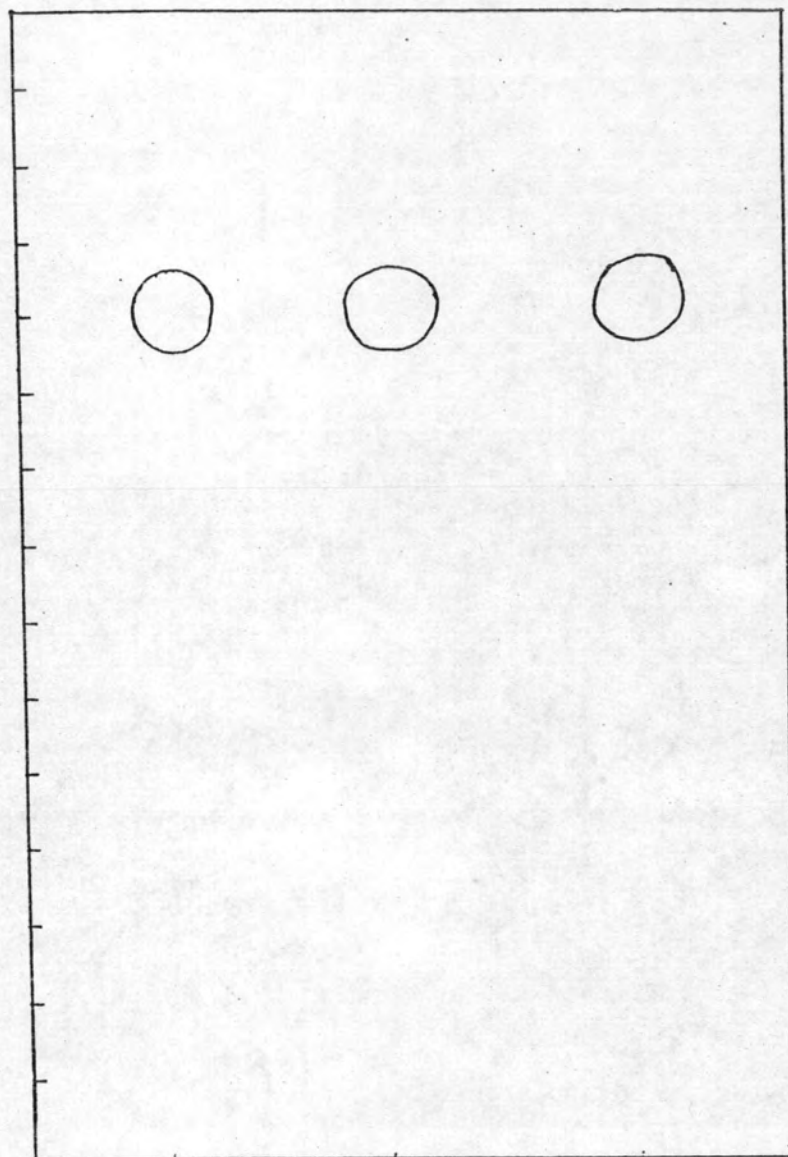


Figure 19 Thin layer chromatogram of Co_1

Silica gel G/ benzene : chloroform (7:3)

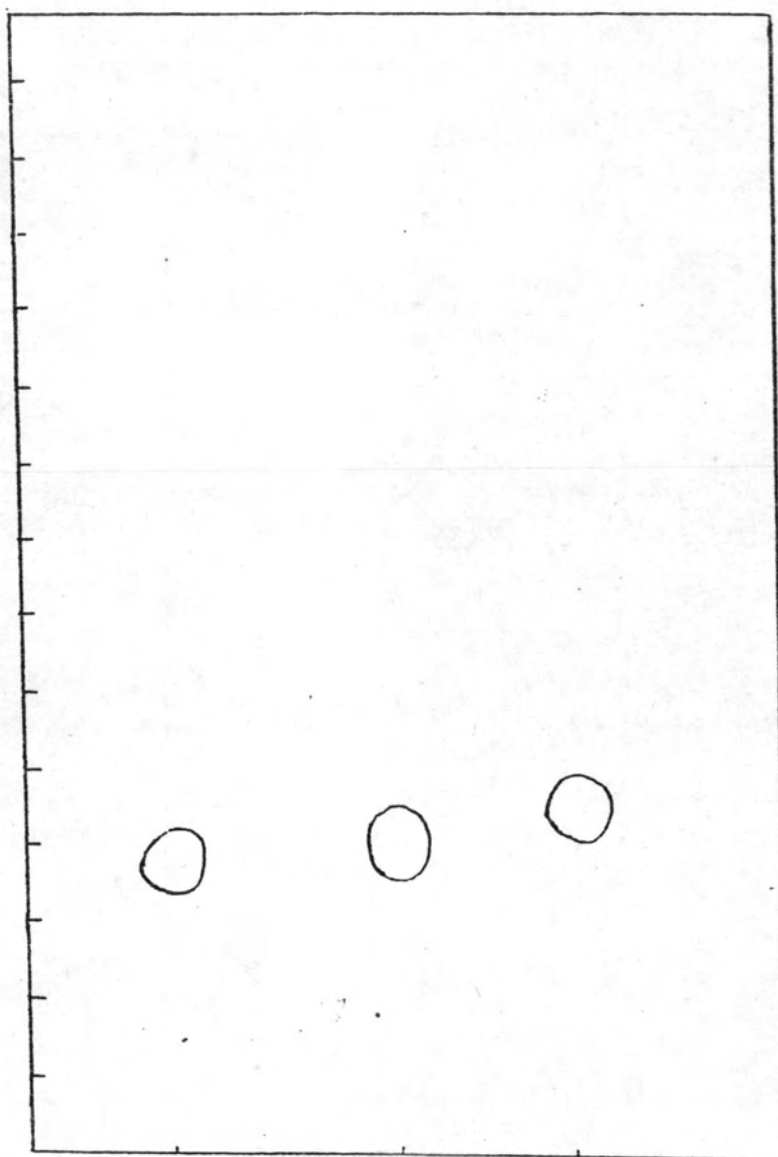


Figure 20 Thin layer chromatogram of Co_1

Silica gel G/ dichloromethane

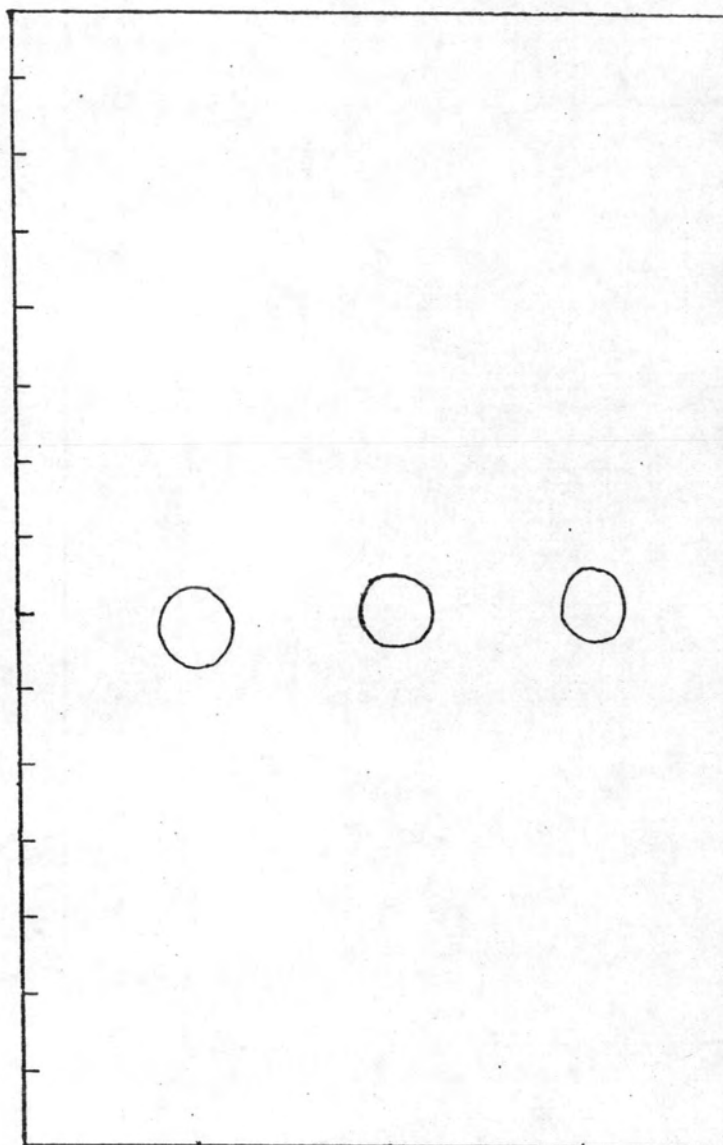


Figure 21 Thin layer chromatogram of Co_1

Silica gel G/ chloroform : acetone (9:1)

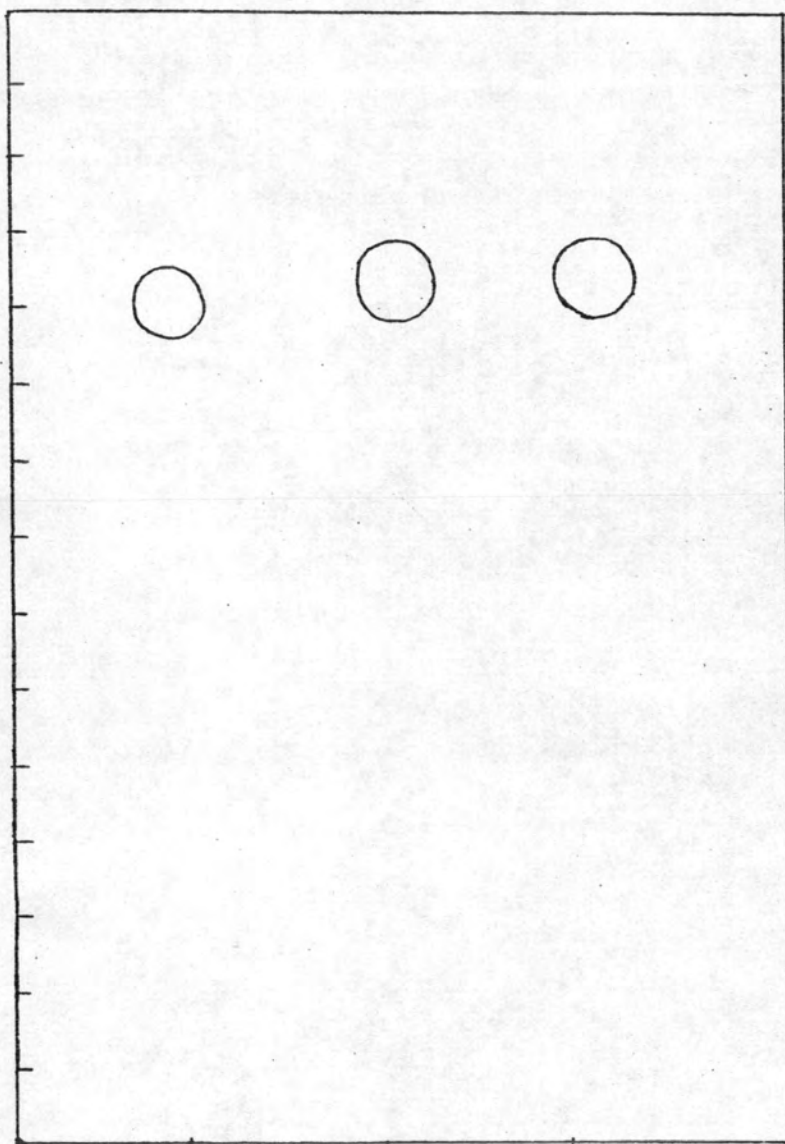


Figure 22 Thin layer chromatogram of Co_1

Silica gel G/ petroleum ether, chloroform, acetone (1+8+1)

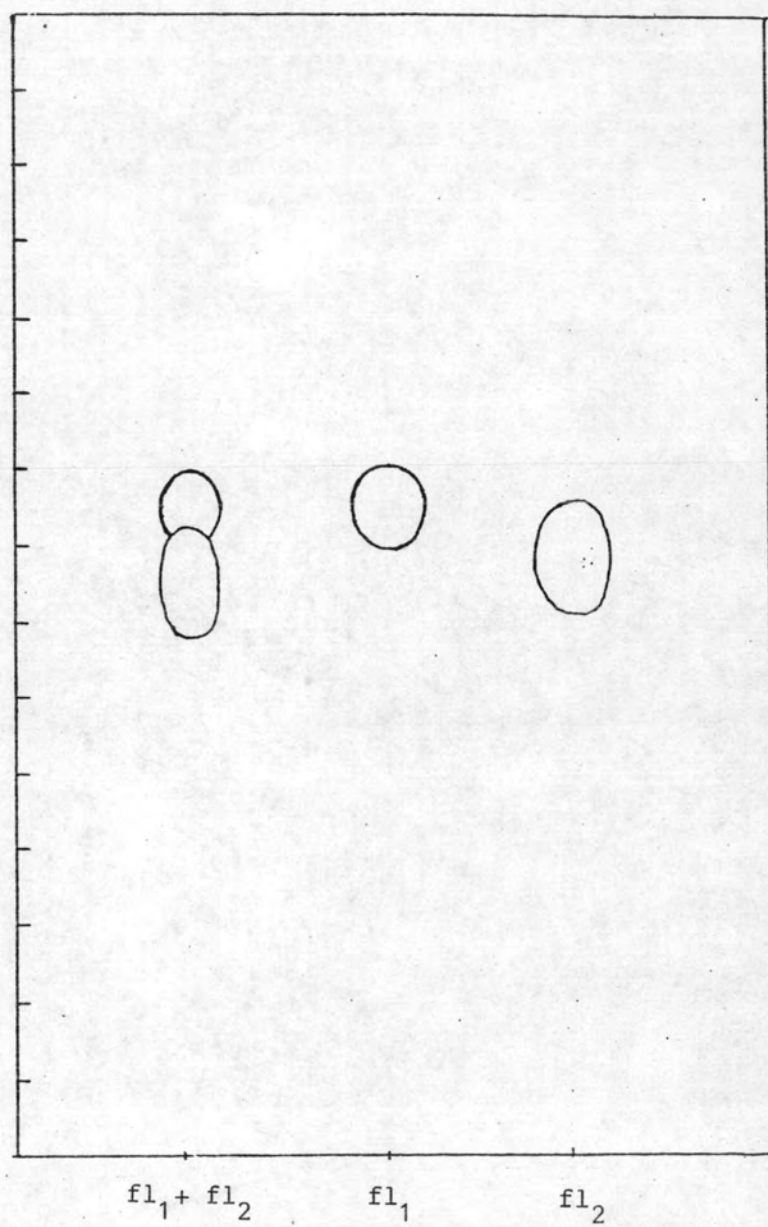


Figure 23 Thin layer chromatogram of fl_1 and fl_2

Silica gel G/ benzene, diethyl ether, methanol (8+1+1)

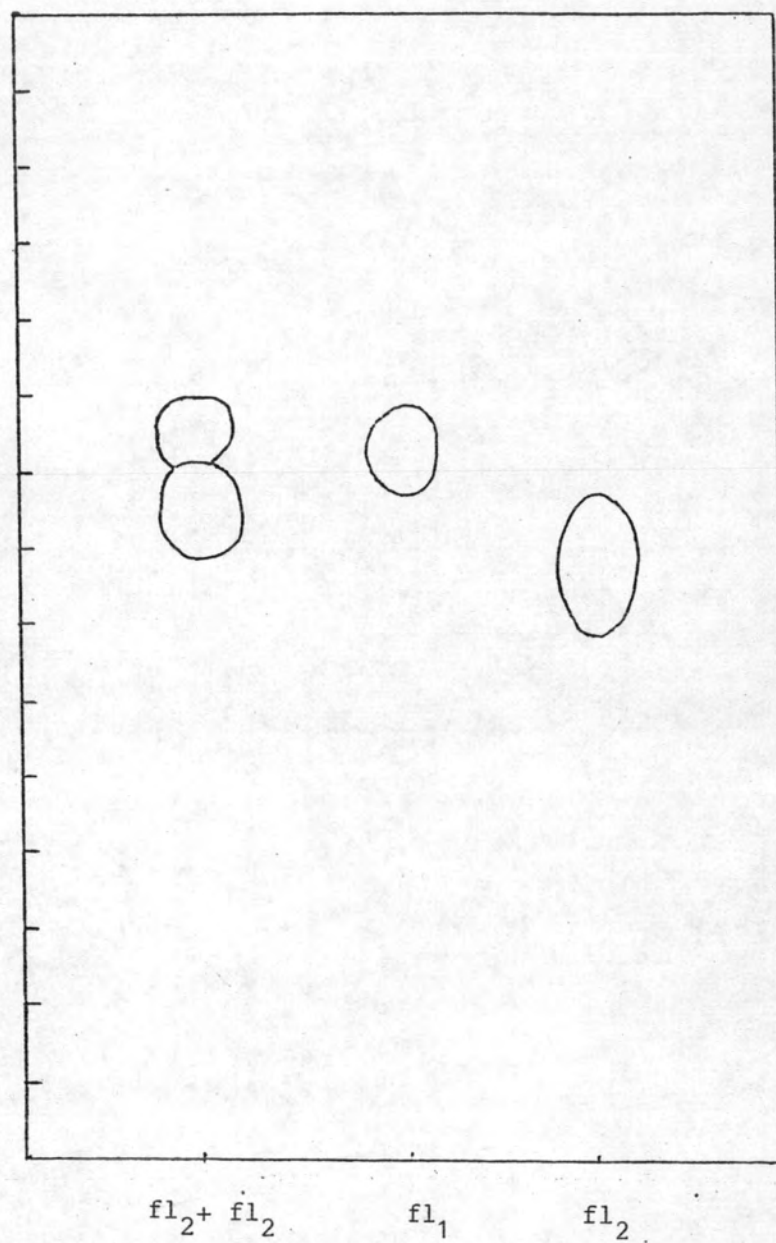


Figure 24 Thin layer chromatogram of fl_1 and fl_2

Silica gel G/ cyclohexane : ethyl acetate (1:1)

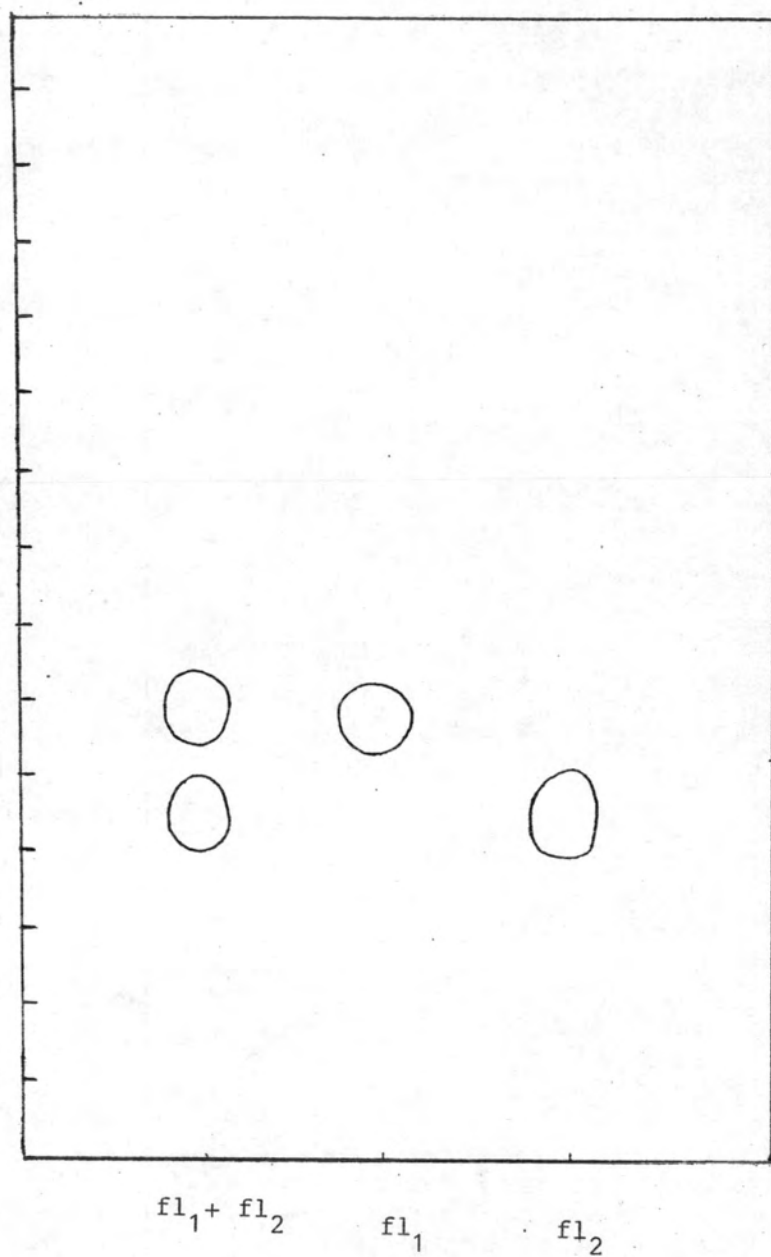


Figure 25 Thin layer chromatogram of fl_1 and fl_2

Silica gel G/ 5% acetone in diethyl ether

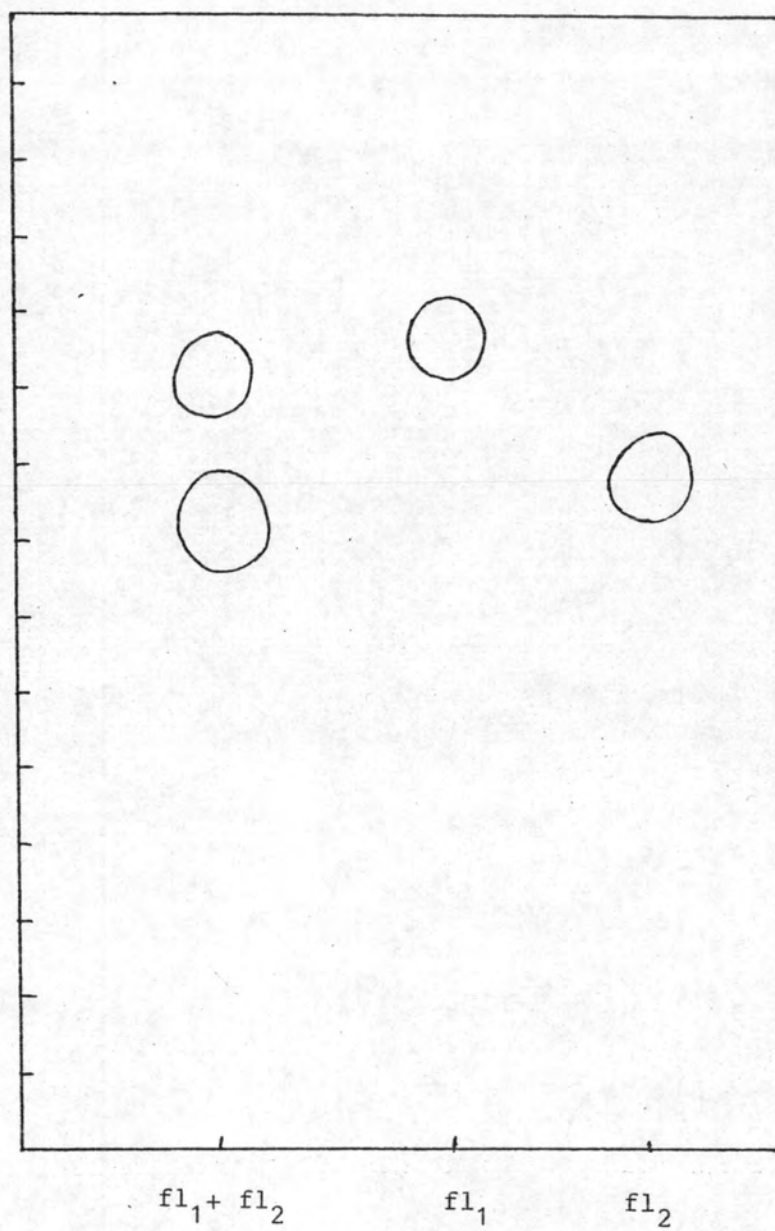


Figure 26 Thin layer chromatogram of fl_1 and fl_2

Silica gel G/ petroleum ether : ethyl acetate (1:2)

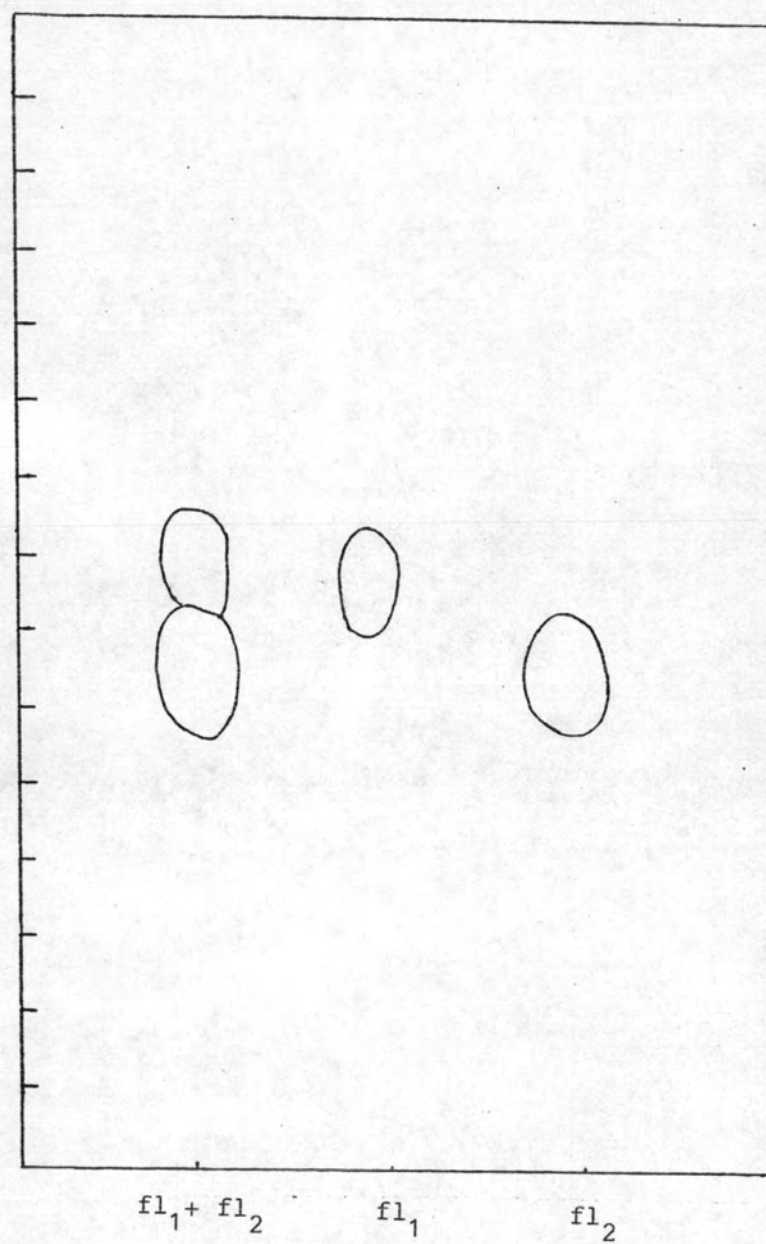


Figure 27 Thin layer chromatogram of fl_1 and fl_2

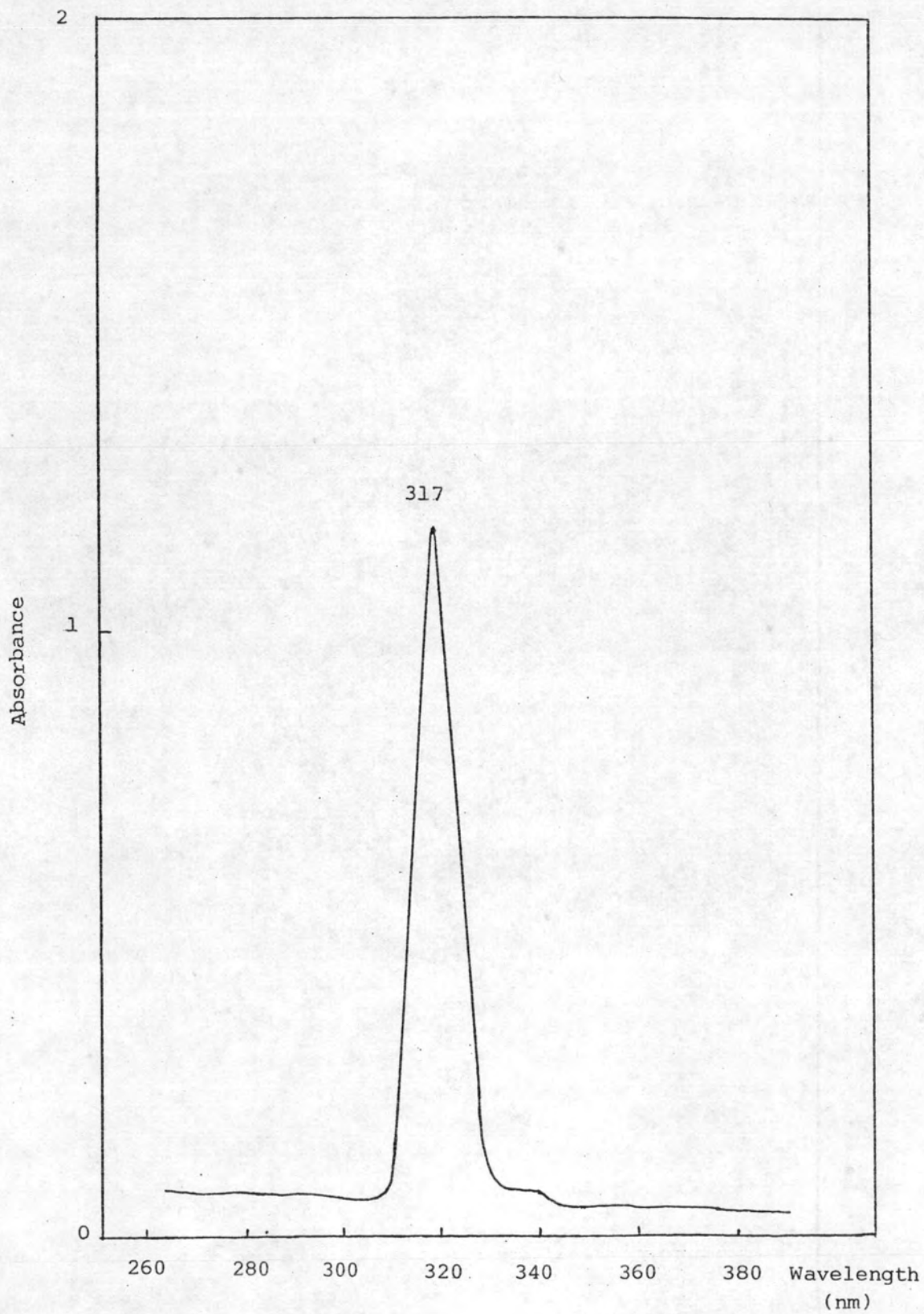


Figure 28 Ultraviolet absorption spectrum of Co_1

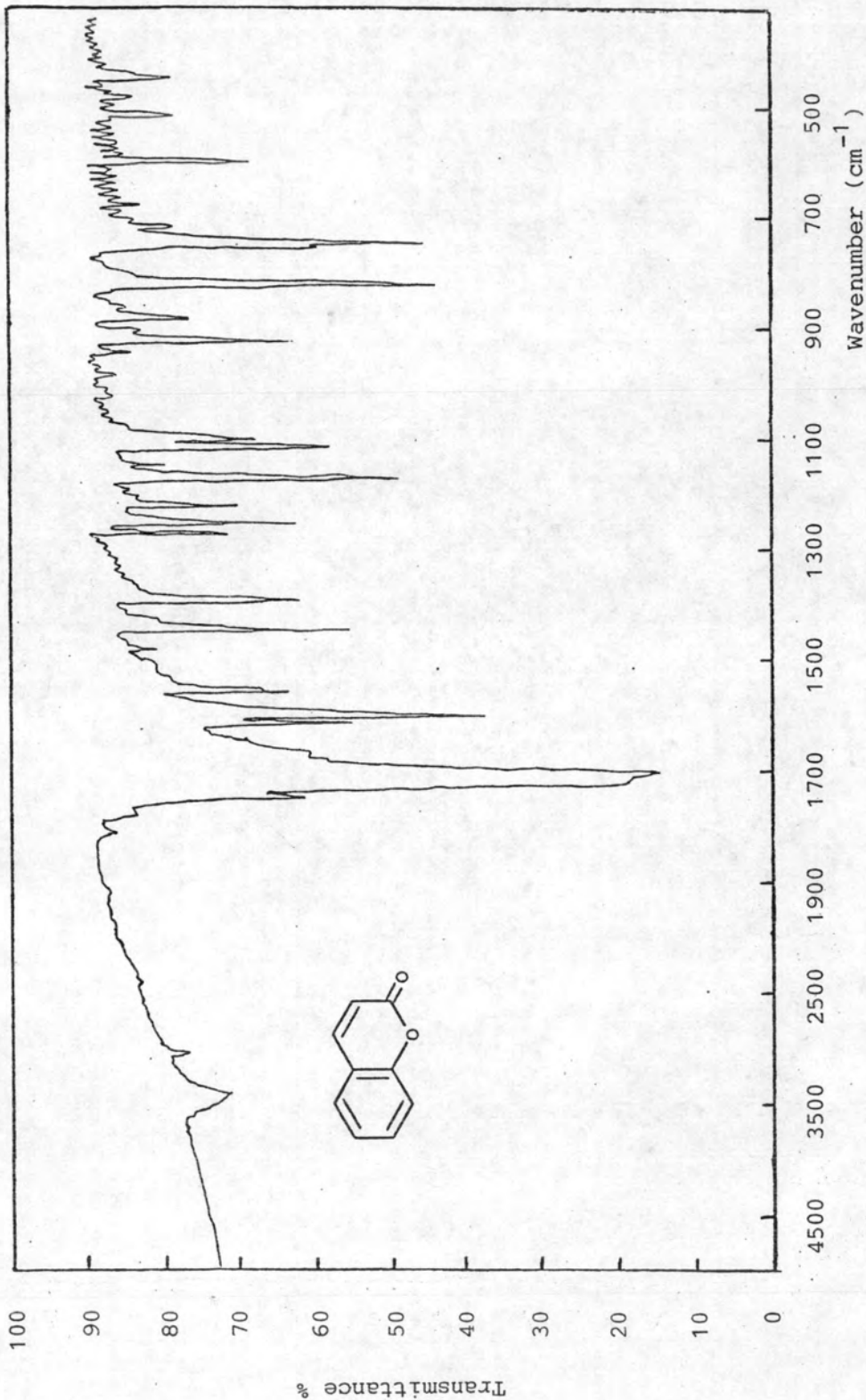
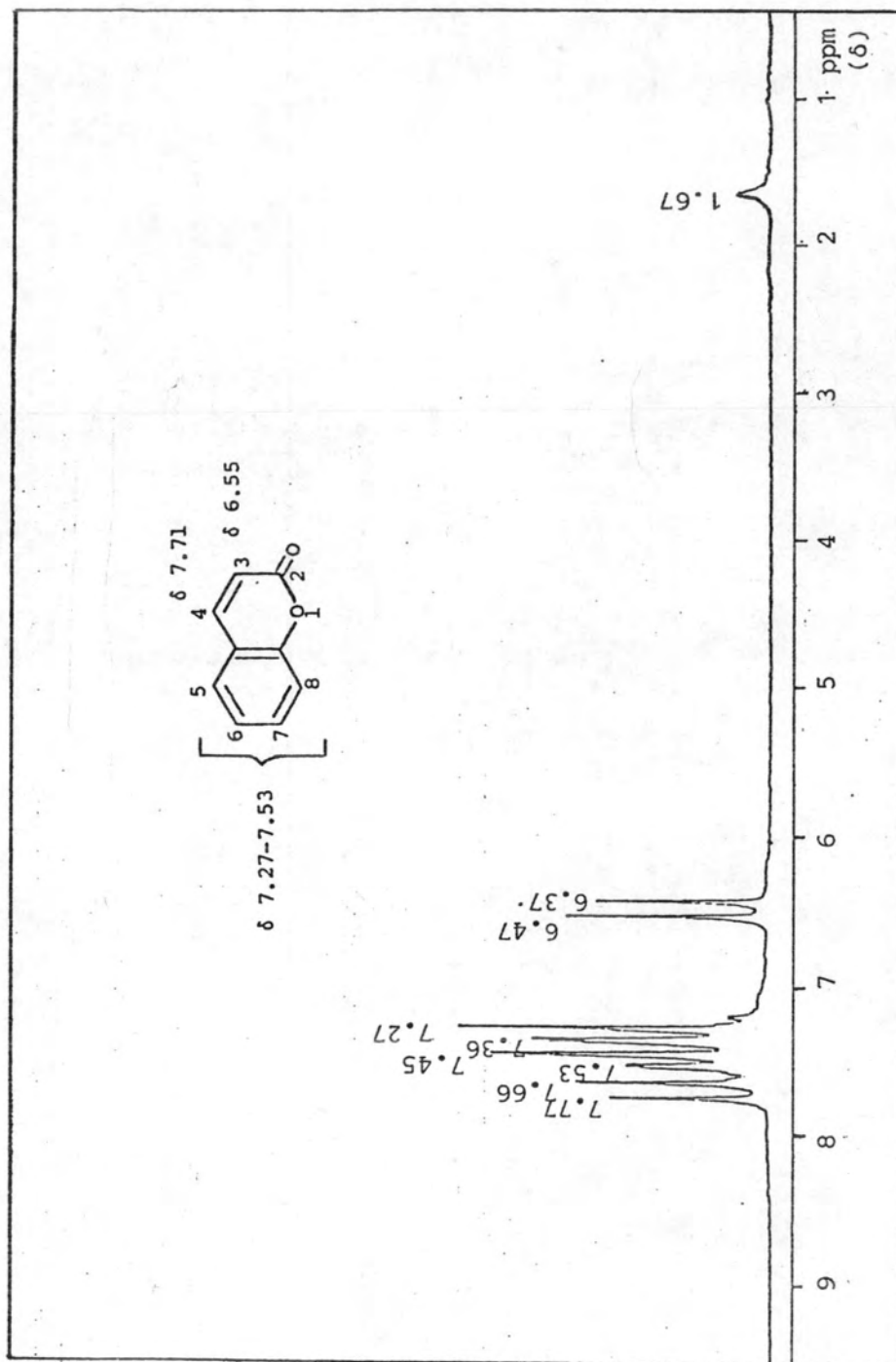
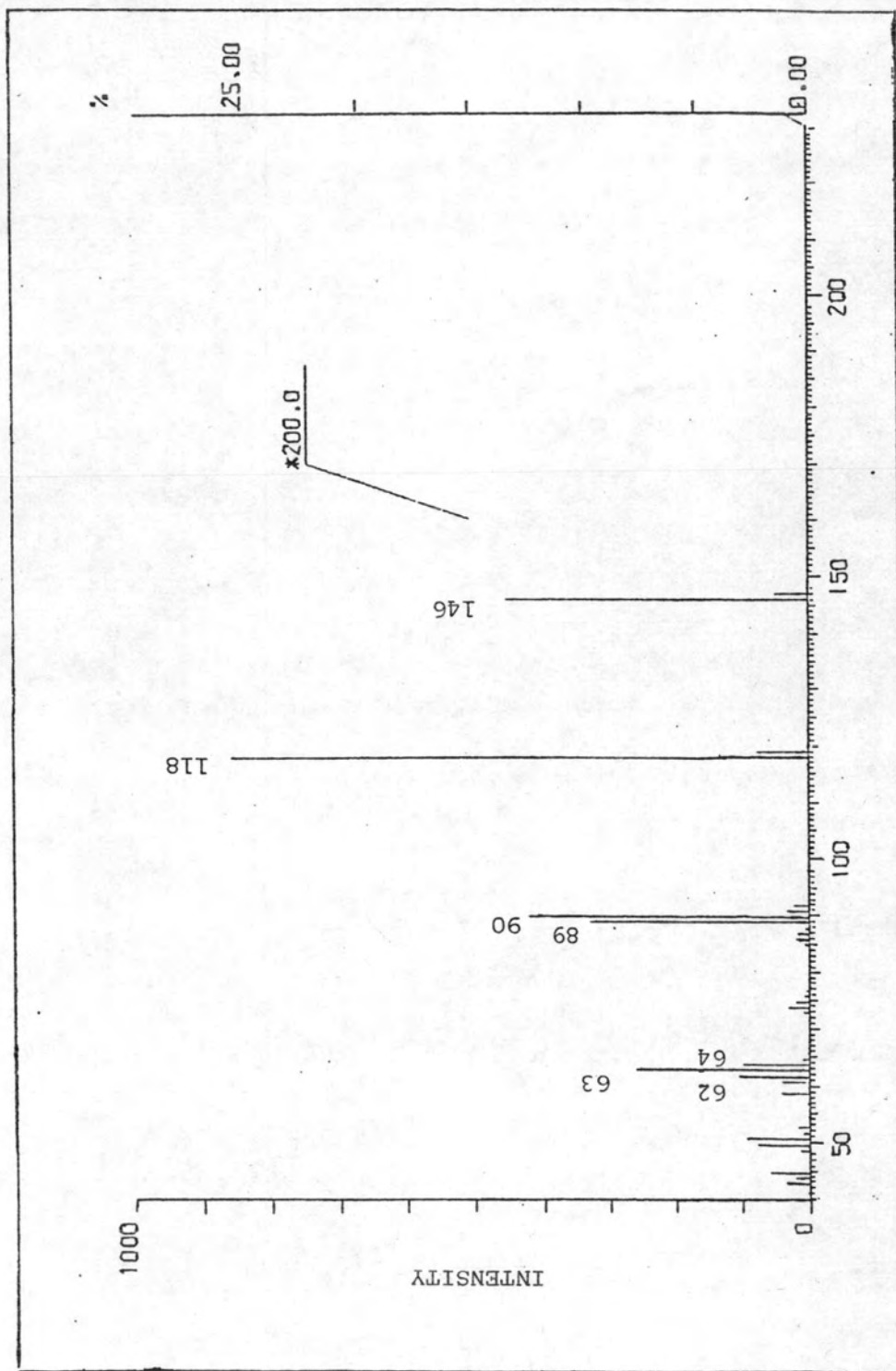


Figure 29 Infrared absorption spectrum of Co₁ in potassium bromide disc

Figure 30 Proton nuclear magnetic resonance spectrum of Co₁

Figure 31 Mass spectrum of Co_1

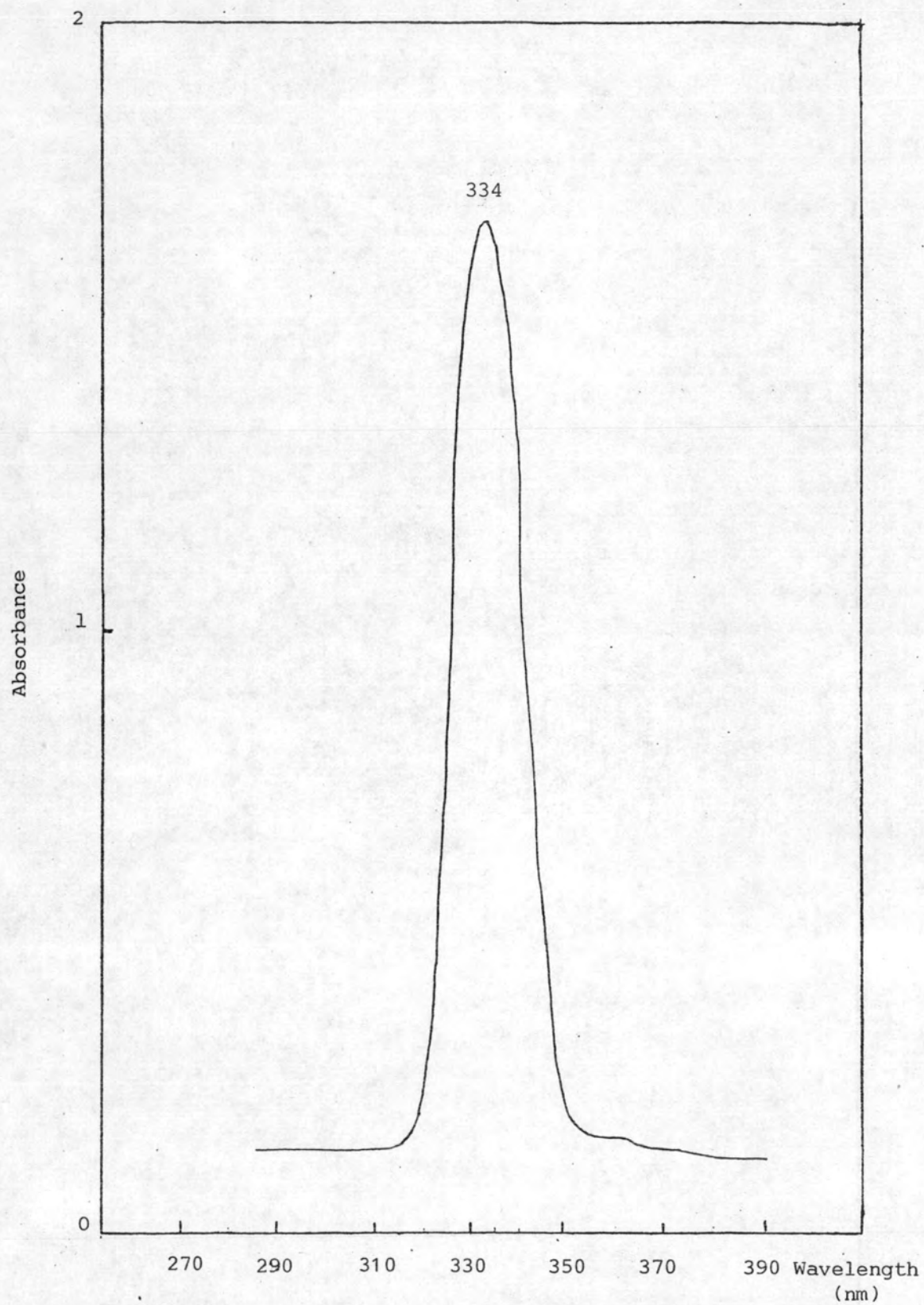


Figure 32 Ultraviolet absorption spectrum of fl_1

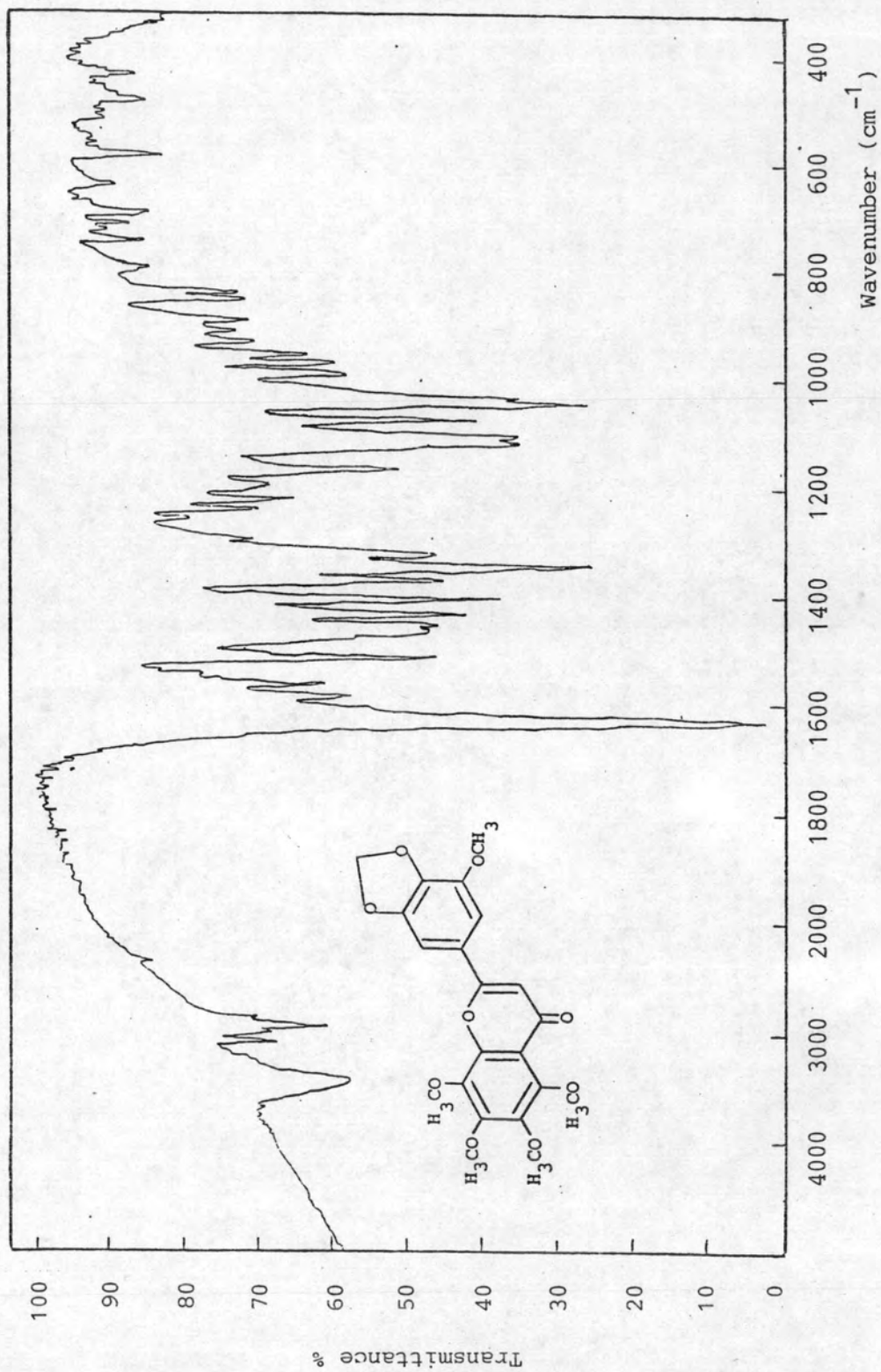


Figure 33 Infrared absorption spectrum of fl₁ in potassium bromide disc

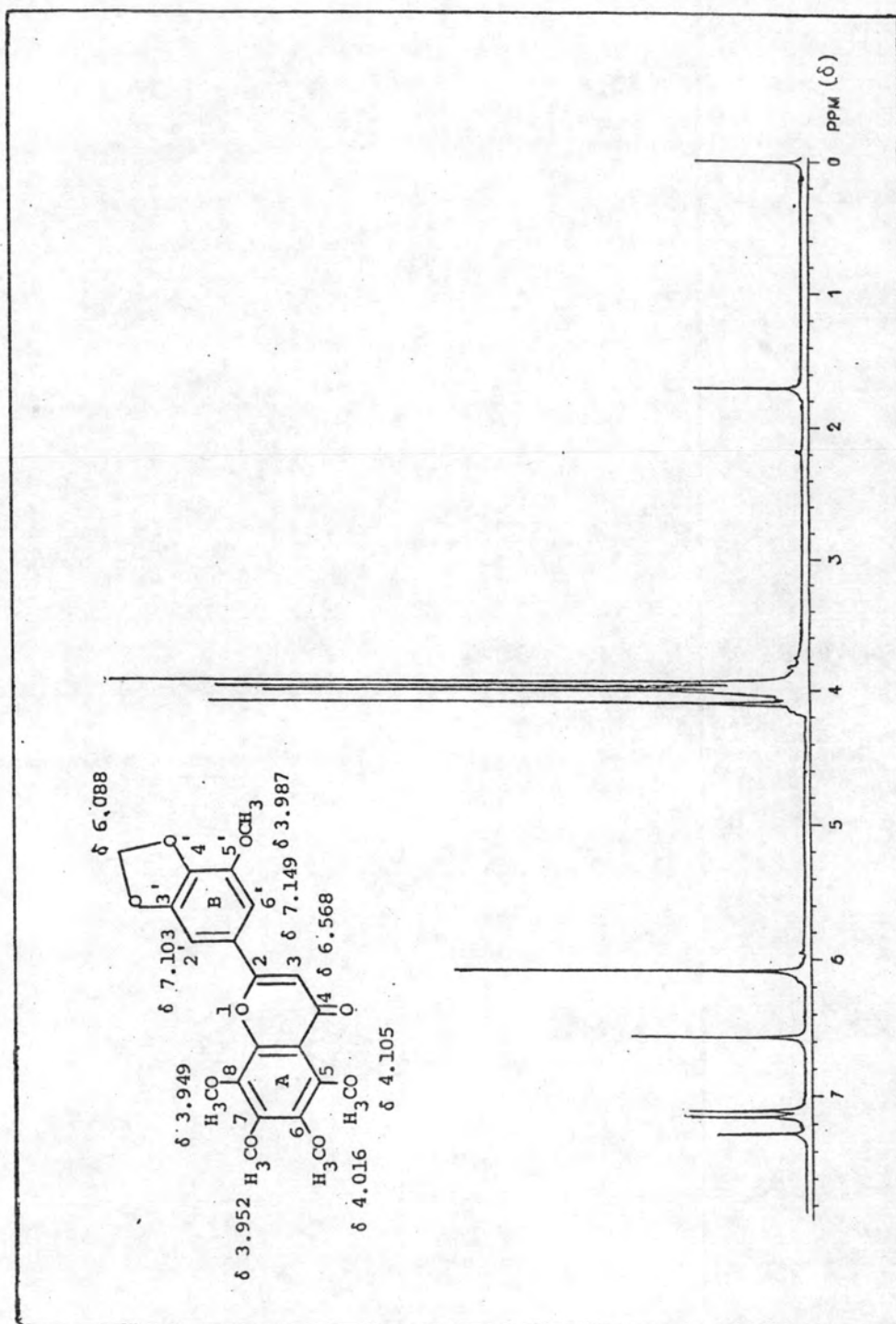


Figure 34 Proton nuclear magnetic resonance spectrum of fl,

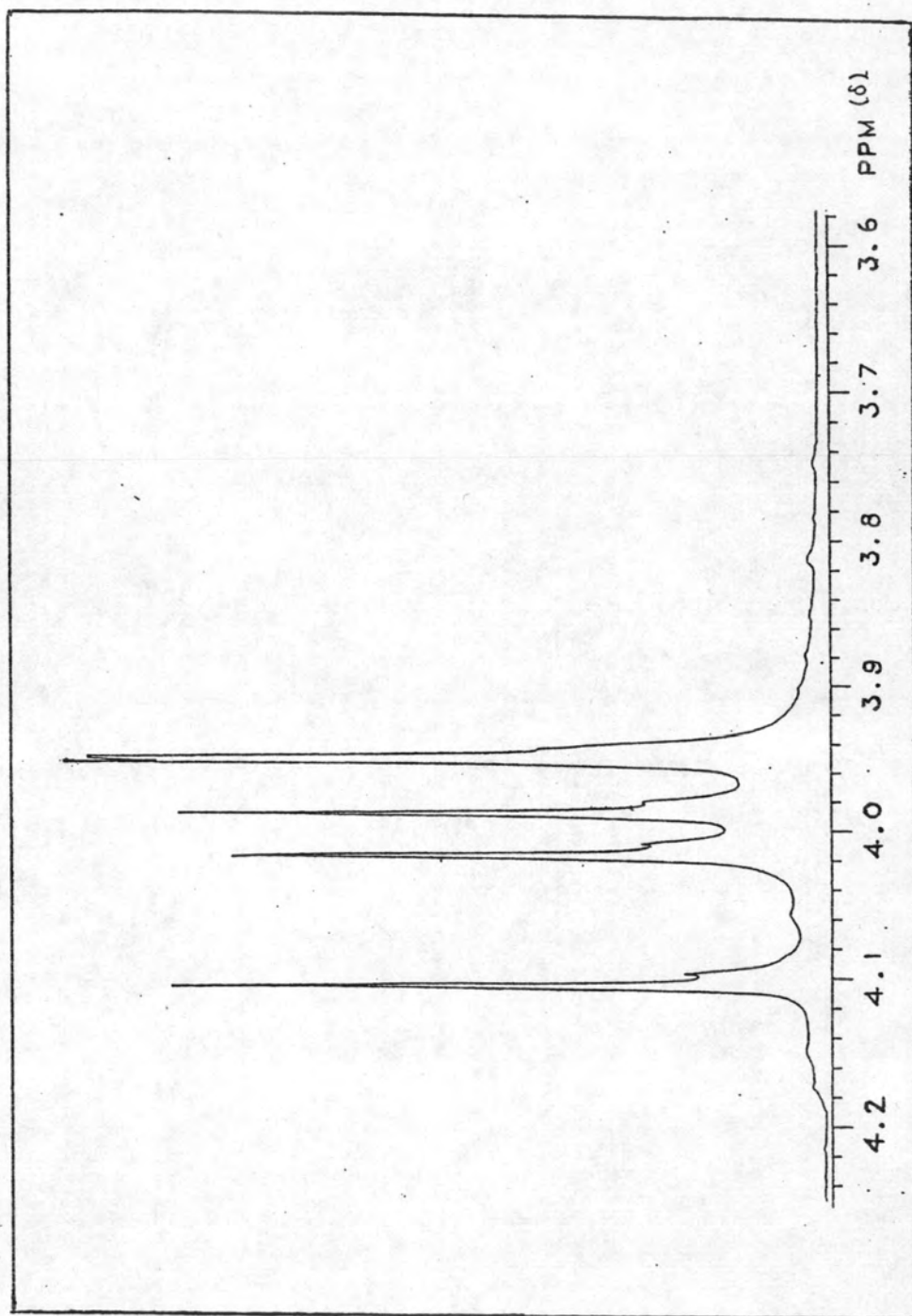


Figure 35 Expansion of proton nuclear magnetic resonance spectrum of fl₁

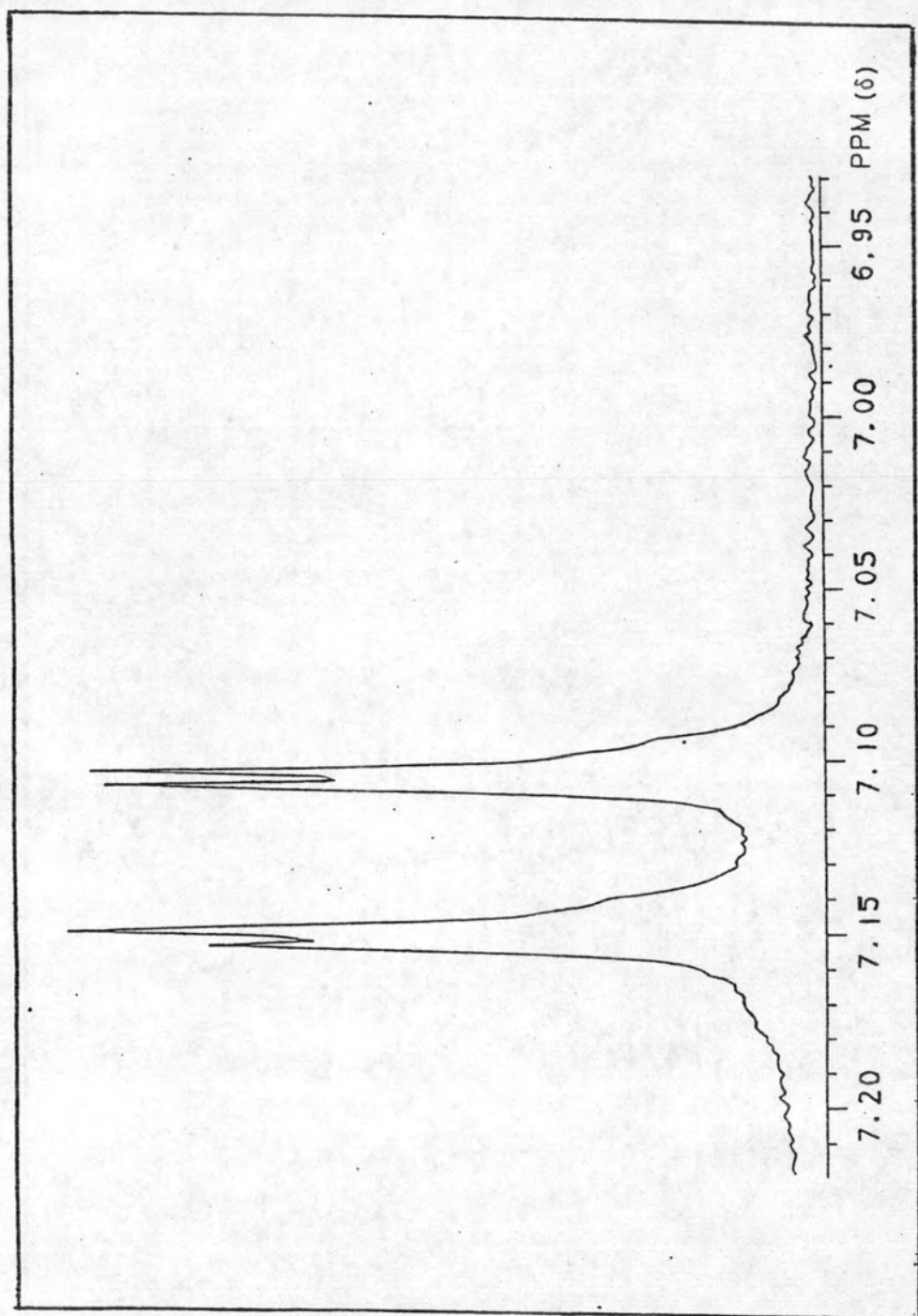


Figure 36 Expansion of proton nuclear magnetic resonance spectrum of fl₁

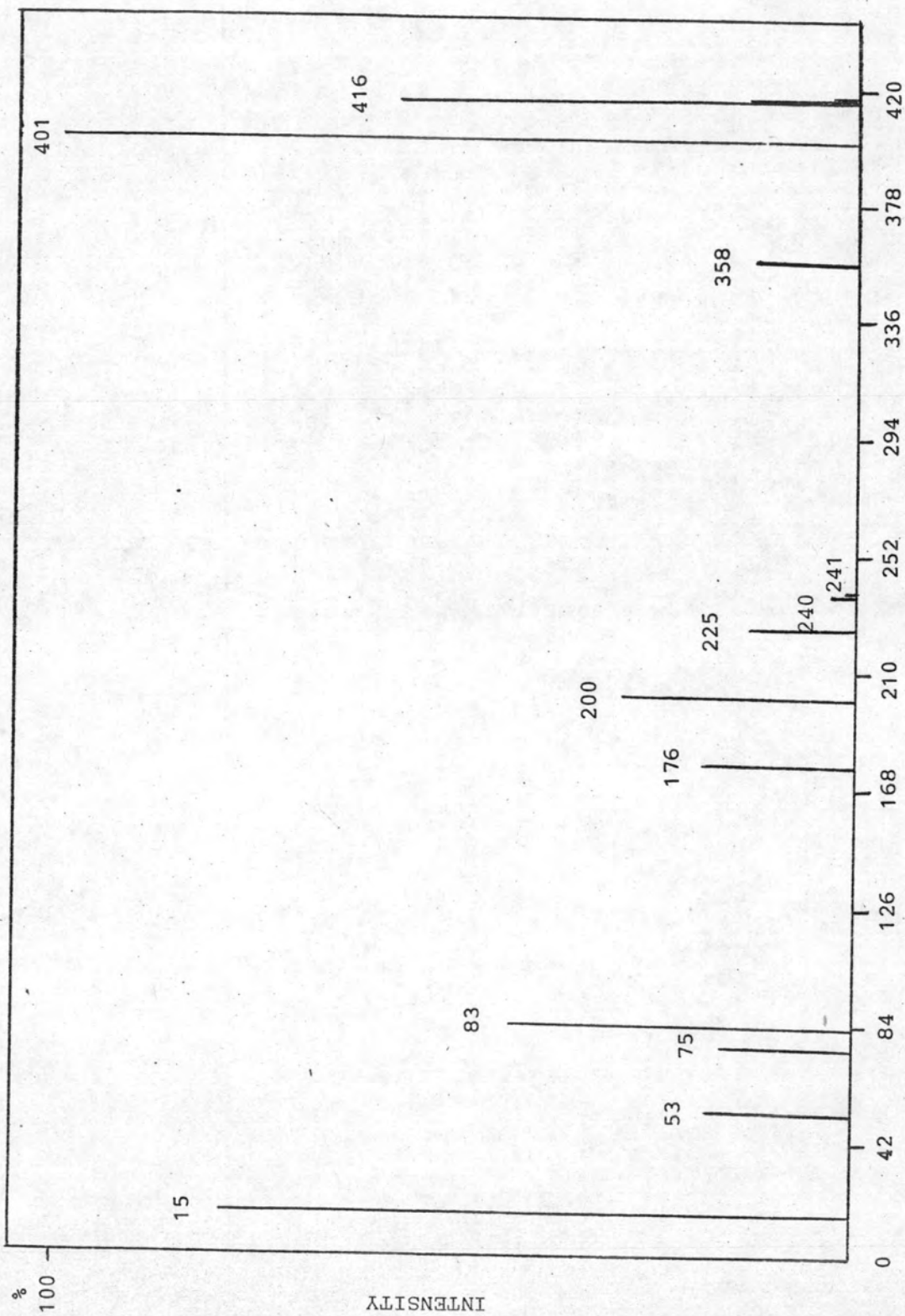


Figure 37 Mass spectrum of fl₁

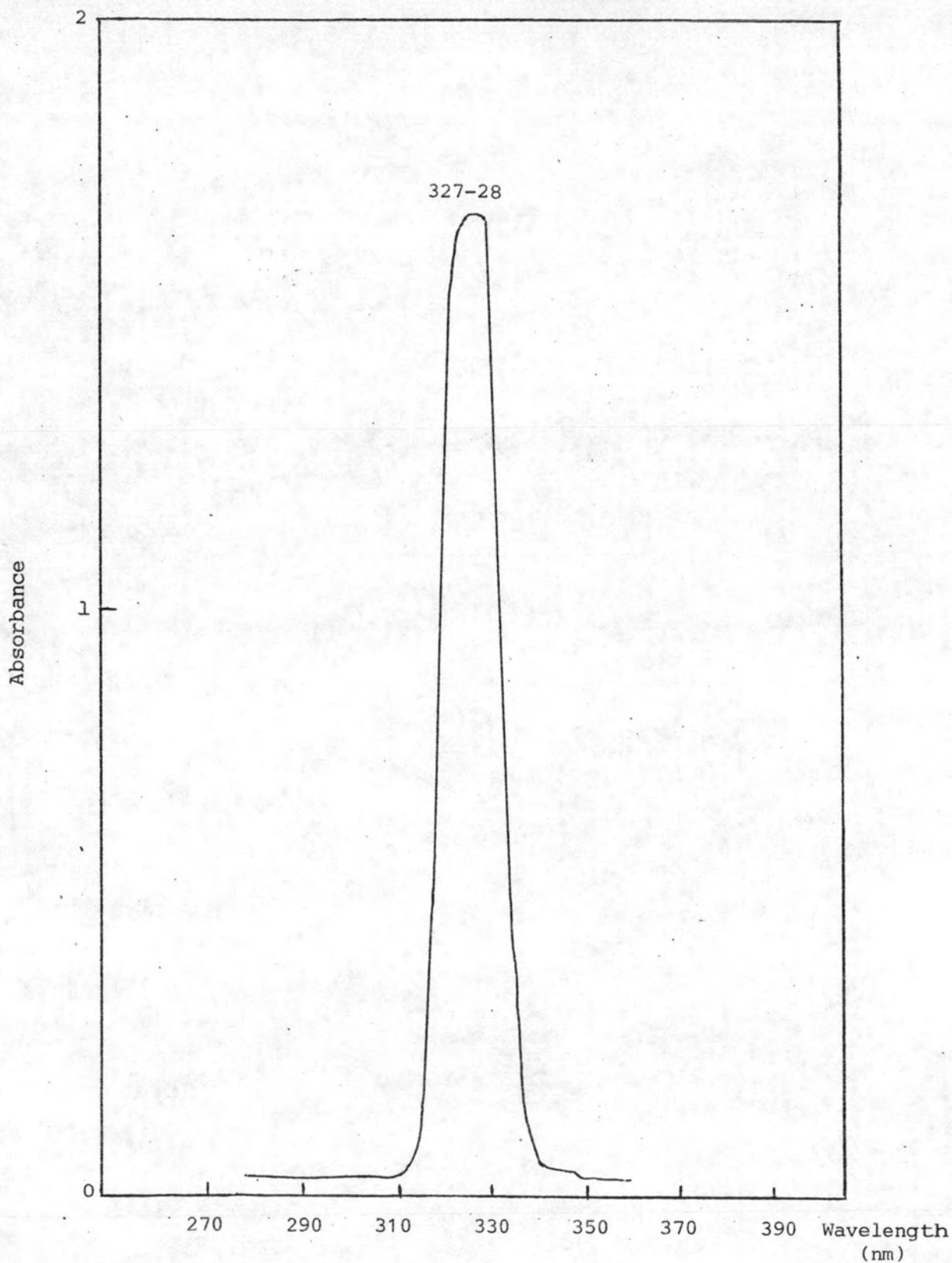
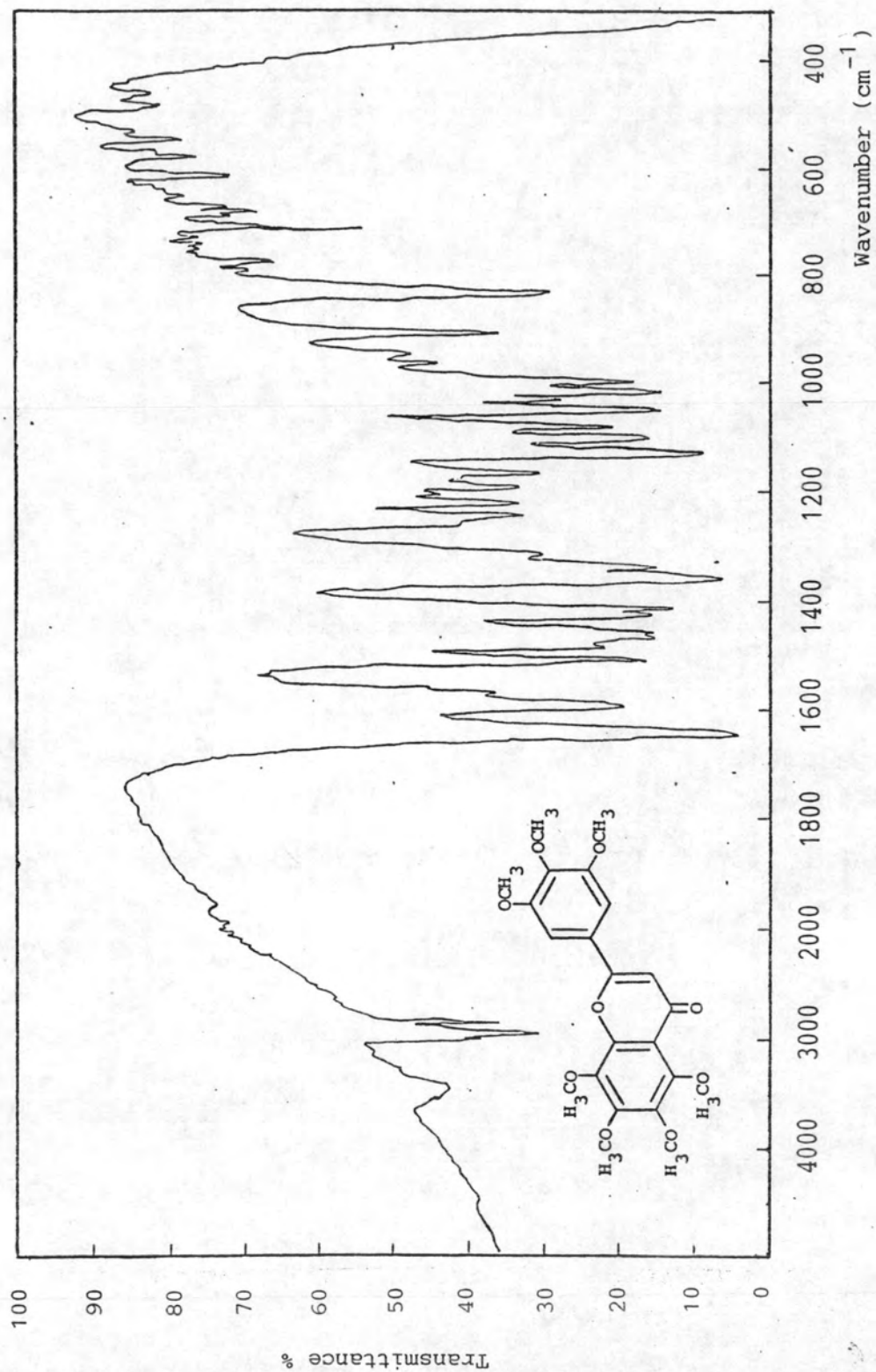
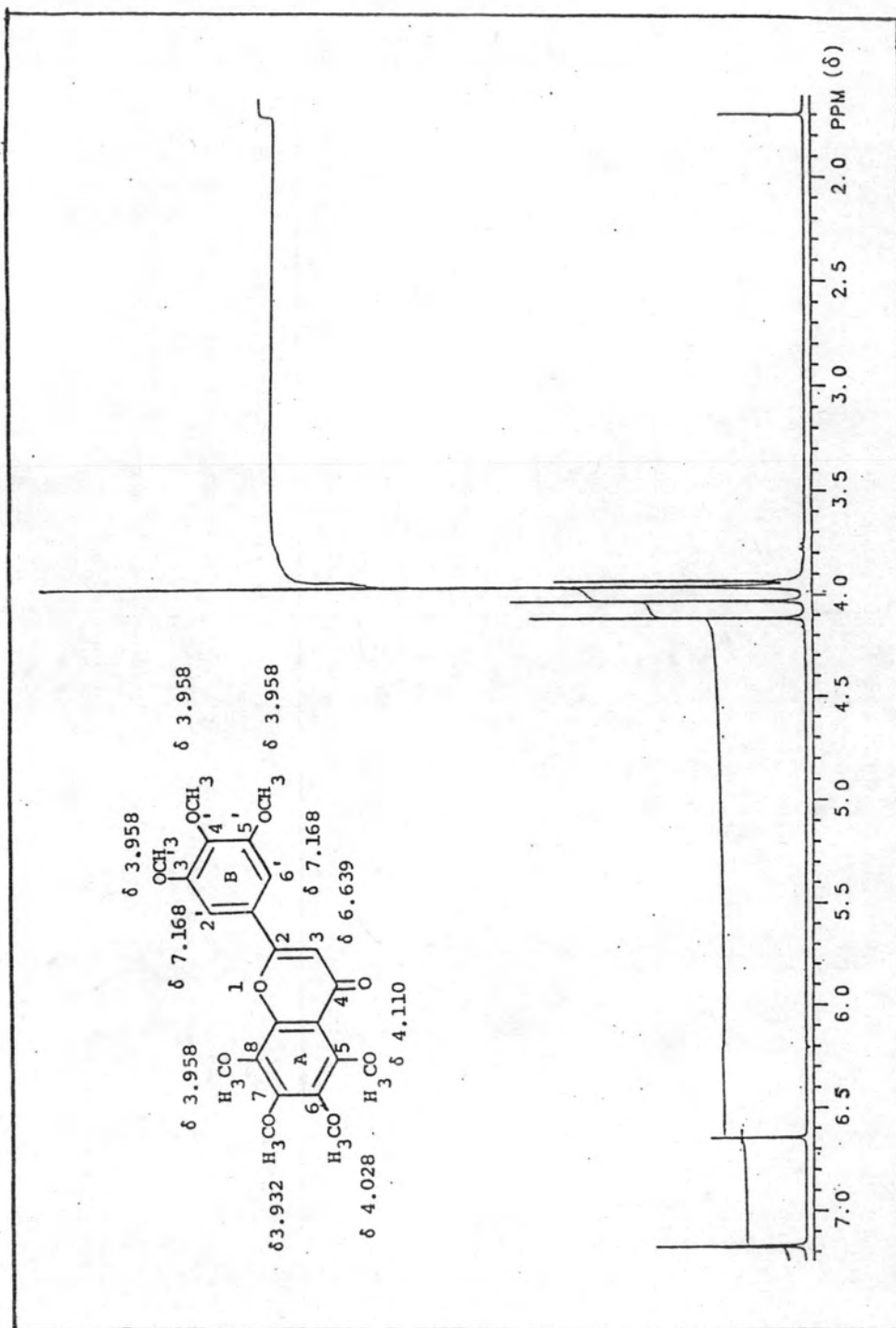


Figure 38 Ultraviolet absorption spectrum of fl_2

Figure 39 Infrared absorption spectrum of fl₂ in potassium bromide disc

Figure 40 Proton nuclear magnetic resonance spectrum of fl_2

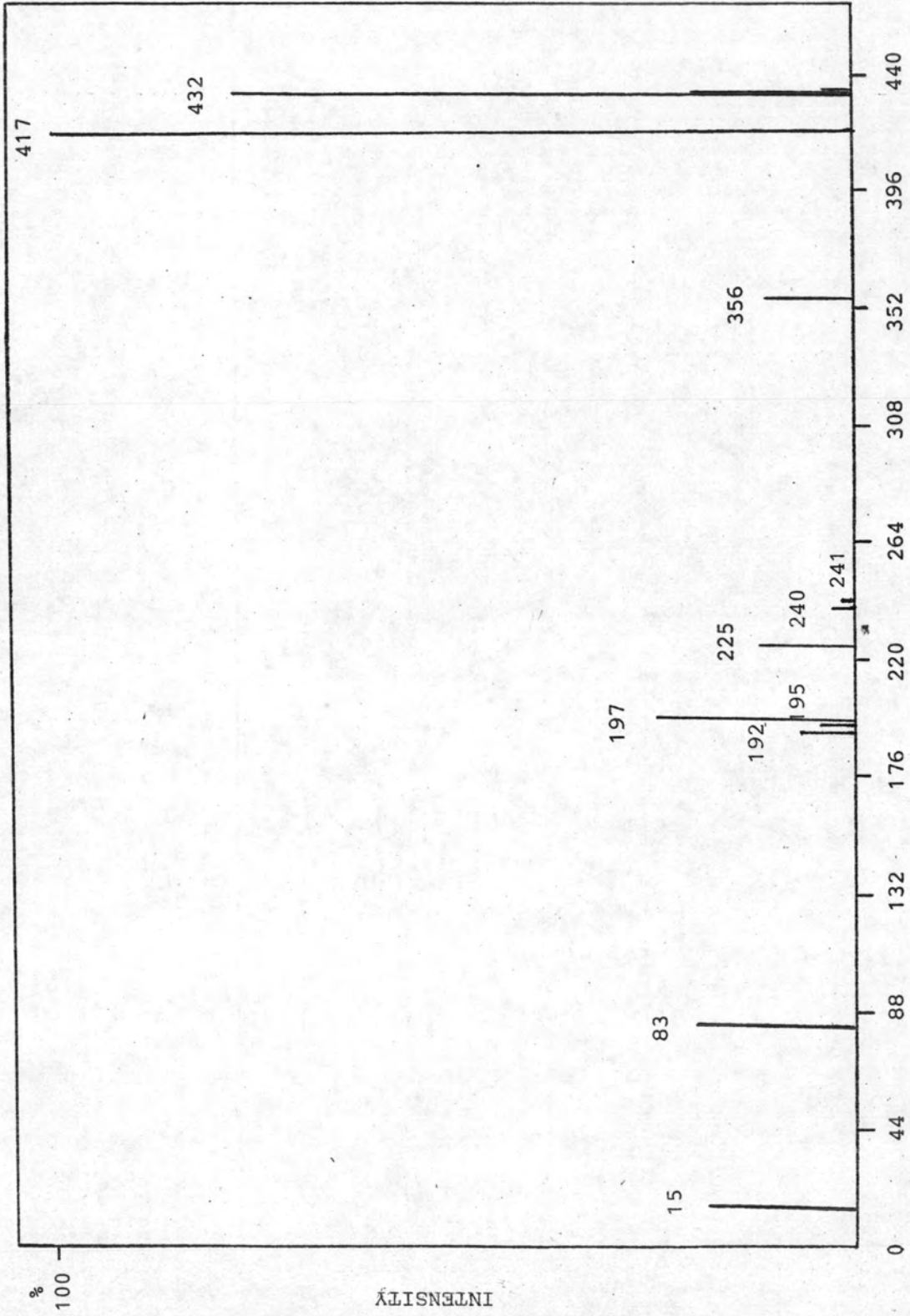


Figure 41 Mass spectrum of fl2

Vita

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Miss Srunya Vajrodaya was born on August 30, 1959 in Bangkok, Thailand. She received her Bachelor of Science in Biology (Botany) in 1980 from the Faculty of Science and Arts, Kasetsart University. Since graduation, she has been a scientist in the Department of Pharmaceutical Botany, Faculty of Pharmaceutical Sciences, Chulalongkorn University, Bangkok, Thailand.

