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APPENDICES

Appendix A

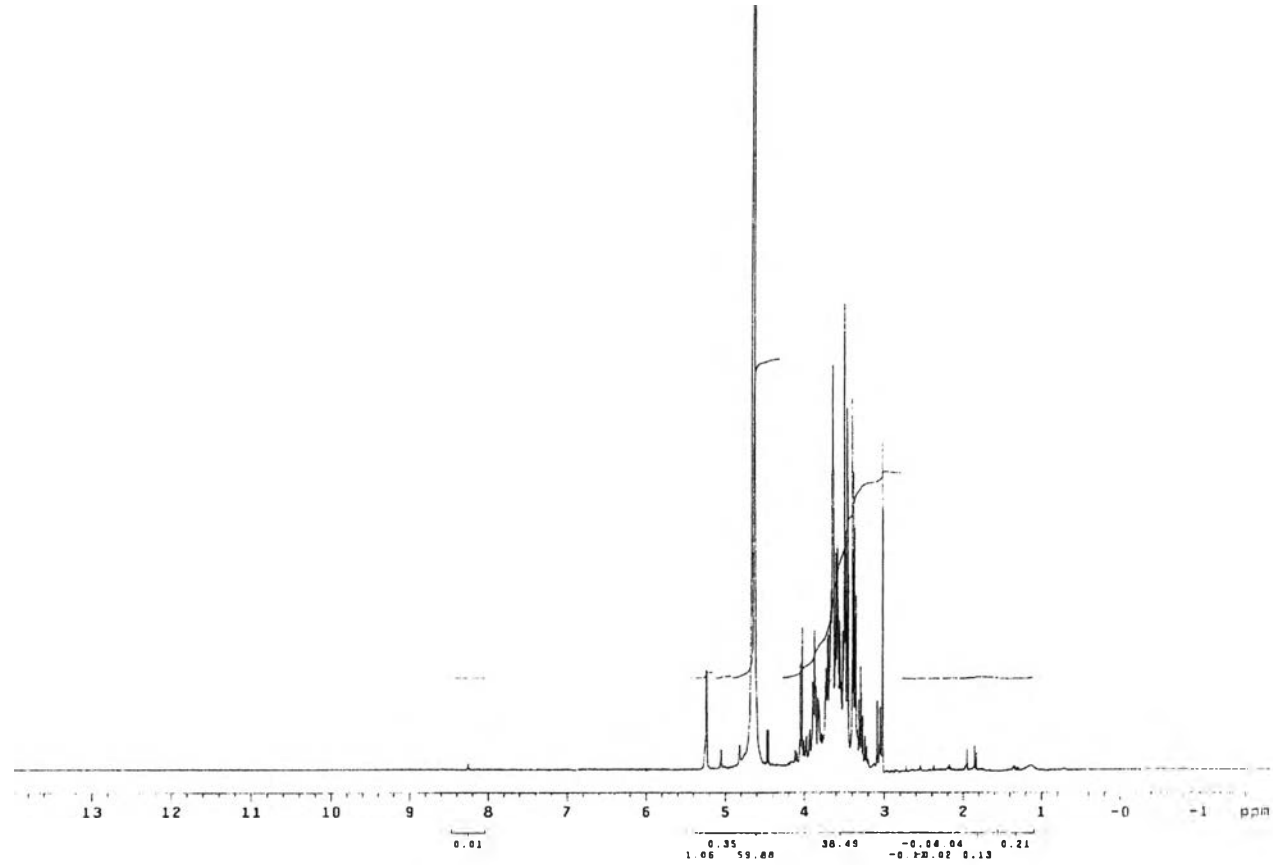


Figure 1 ¹H-NMR spectrum of standard oryzanol

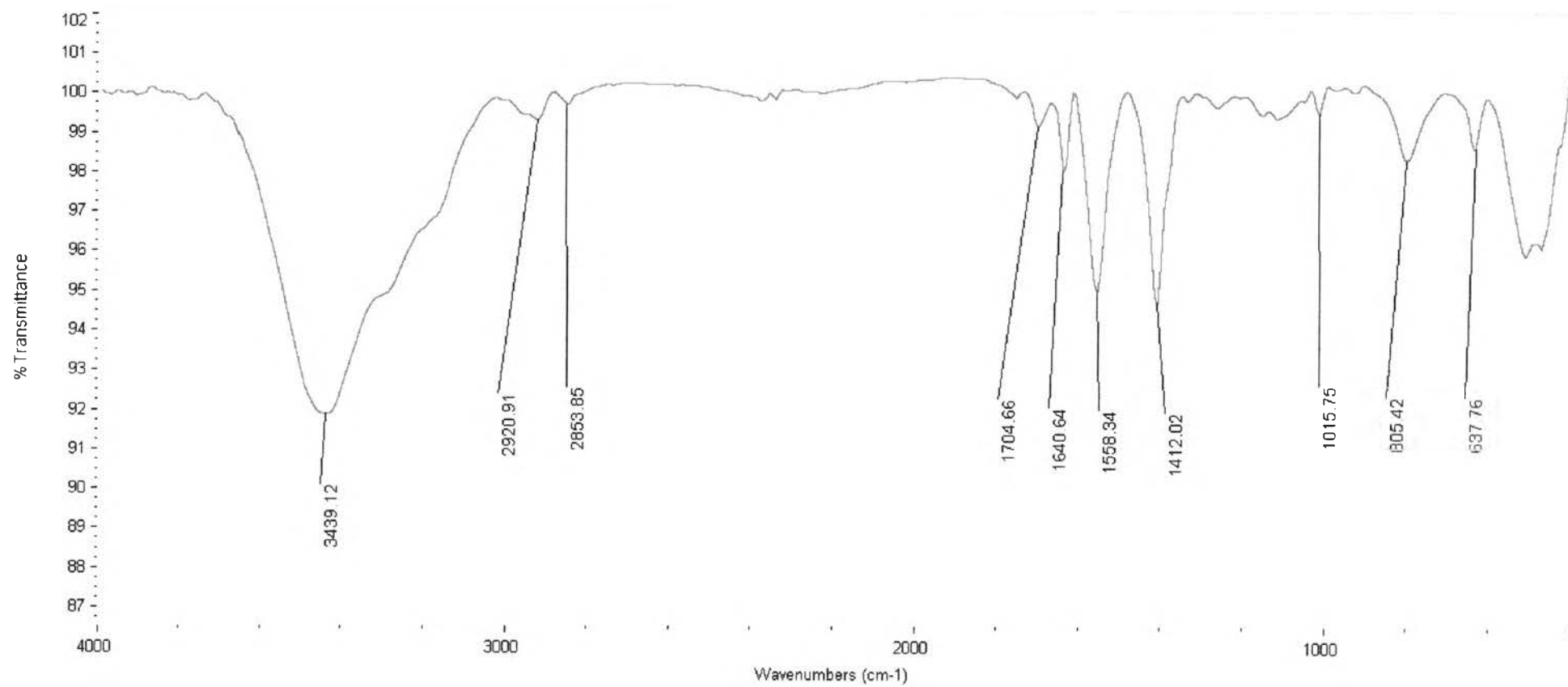


Figure 2 IR spectrum of oryzanol mixture PF1

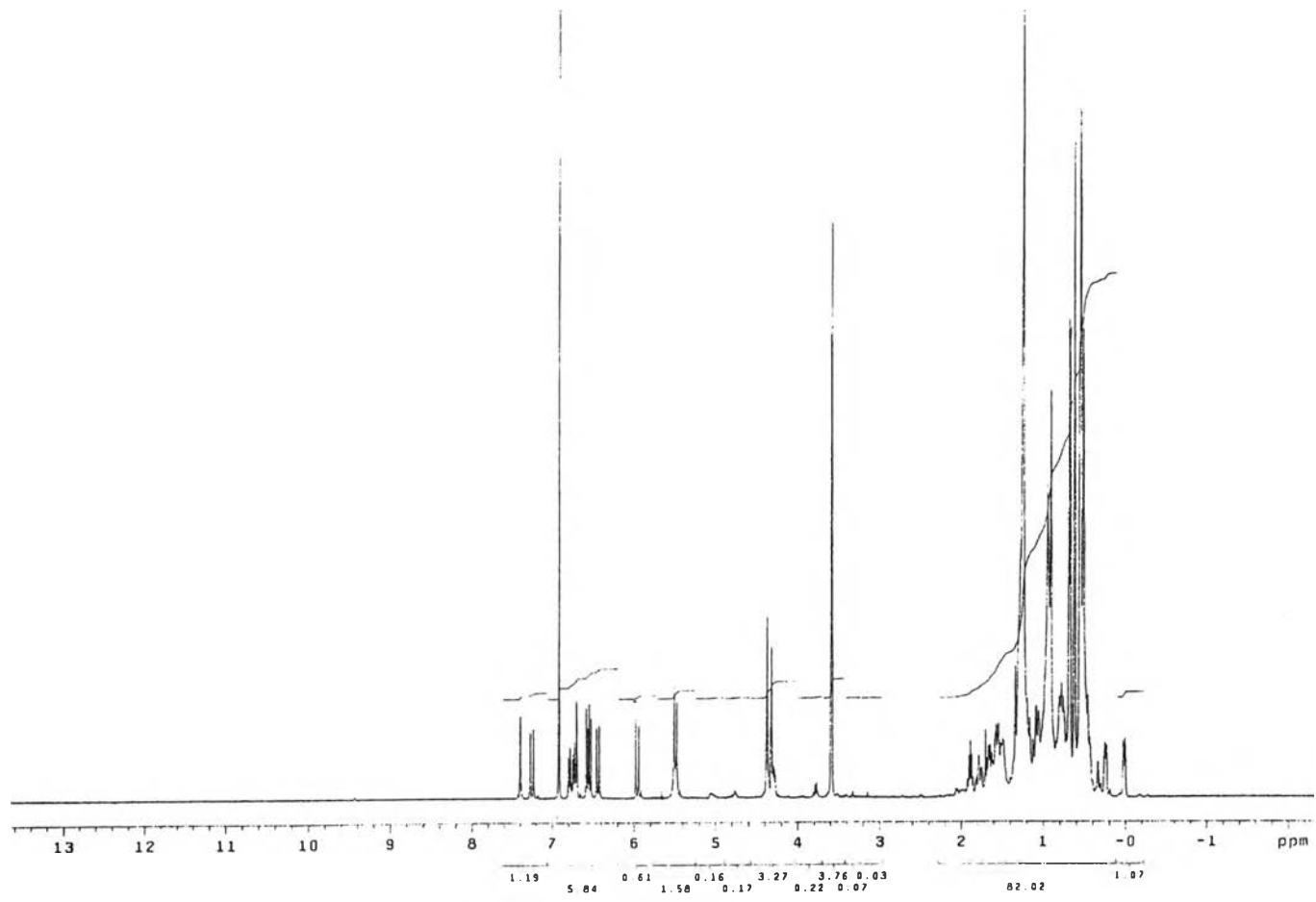


Figure 3 ¹H-NMR spectrum of oryzanol mixture PF1

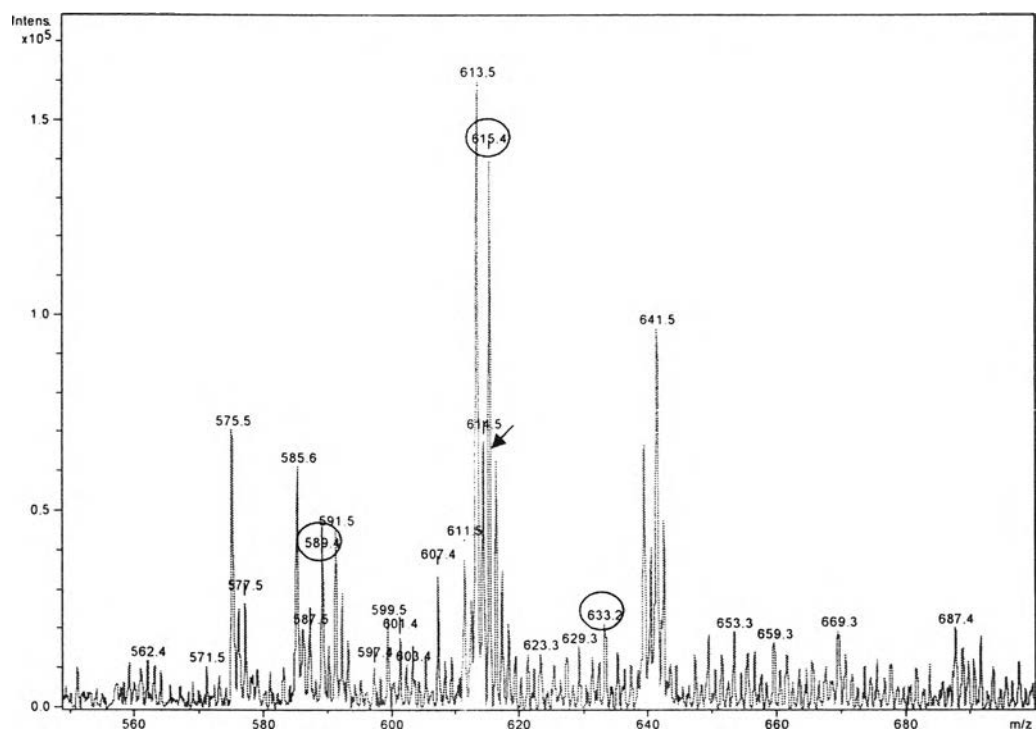
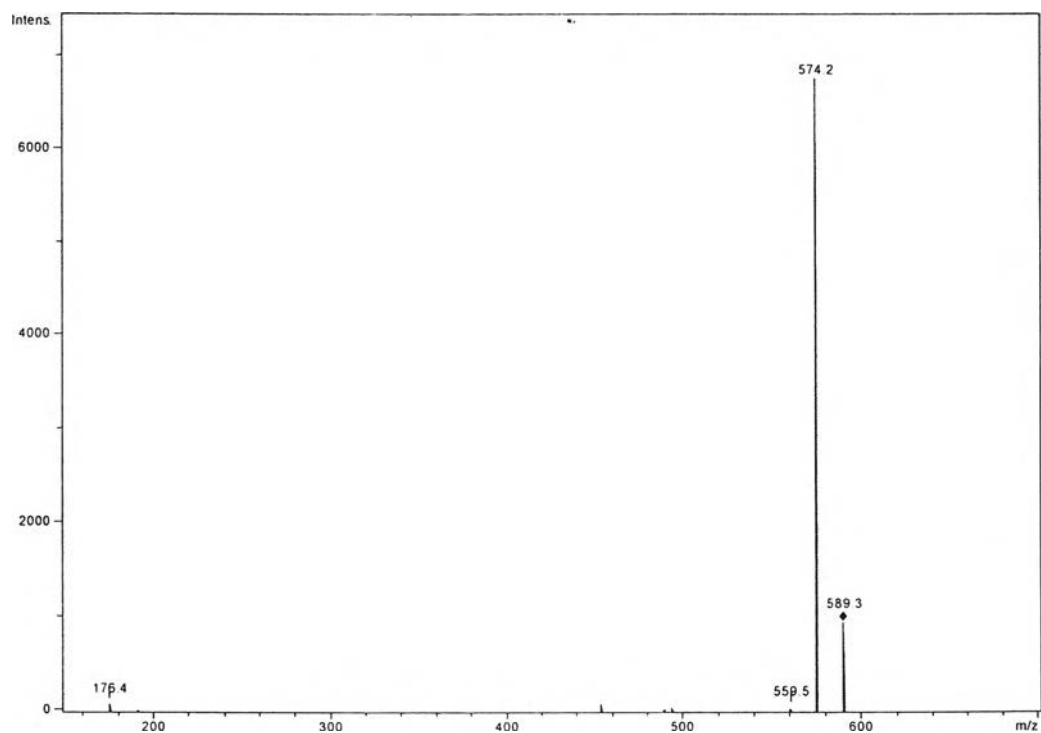


Figure 4 MS spectrum of oryzanol mixture PF1

Figure 5 MS/MS spectrum of oryzanol mixture PF1 at m/z 589

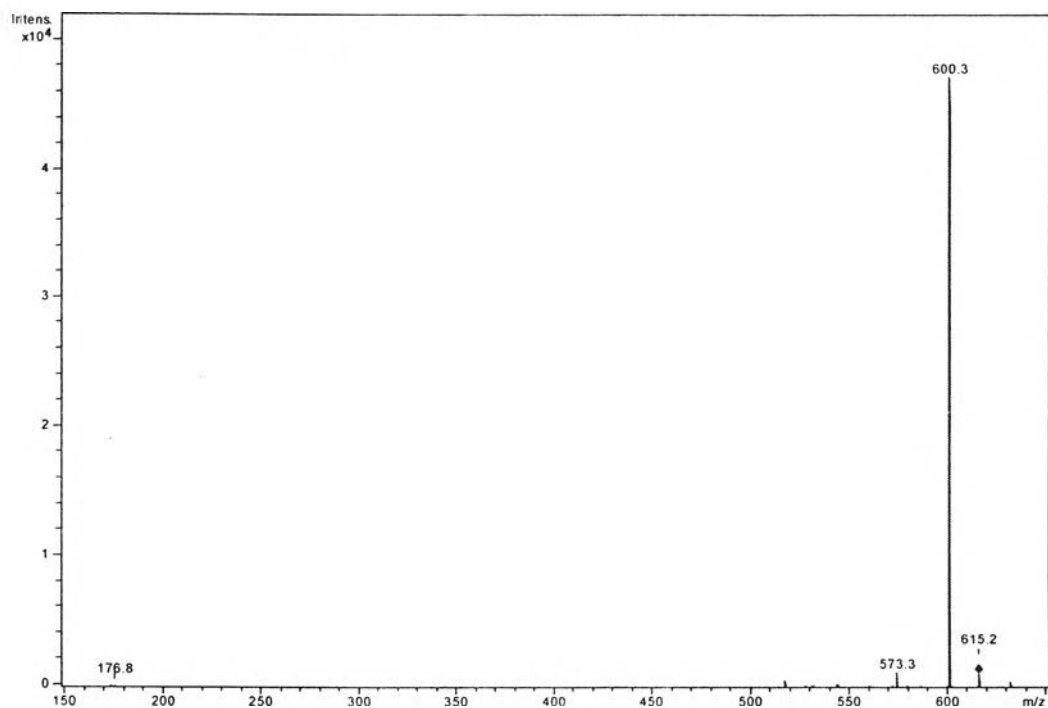


Figure 6 MS/MS spectrum of oryzanol mixture PF1 at m/z 615

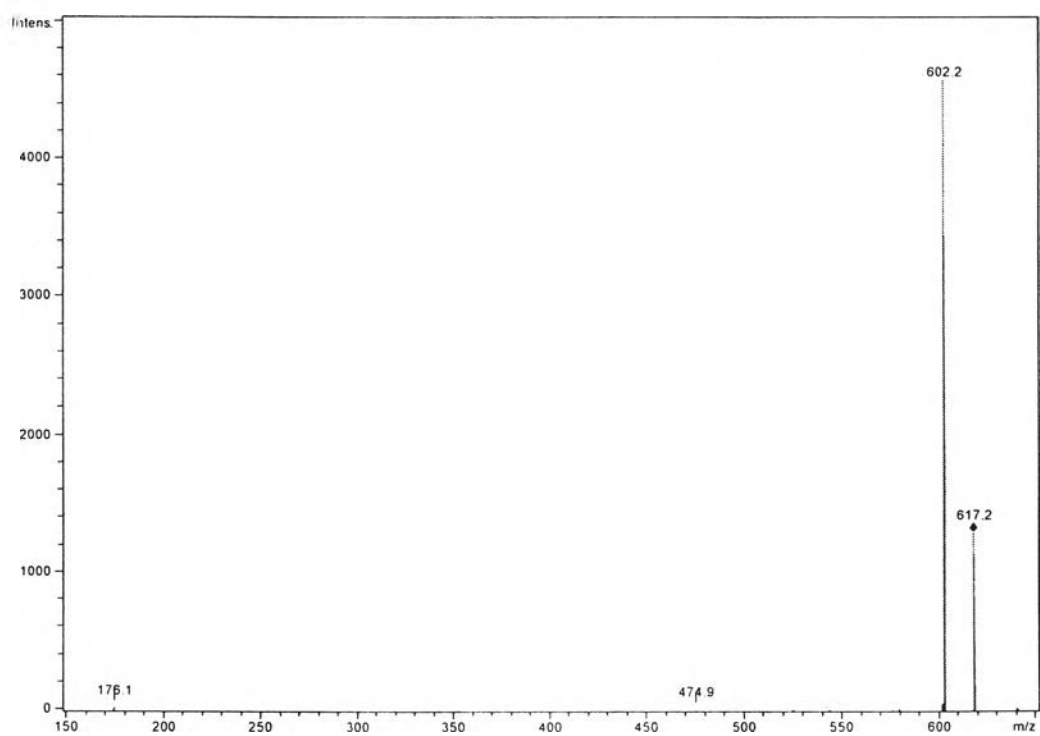


Figure 7 MS/MS spectrum of oryzanol mixture PF1 at m/z 617

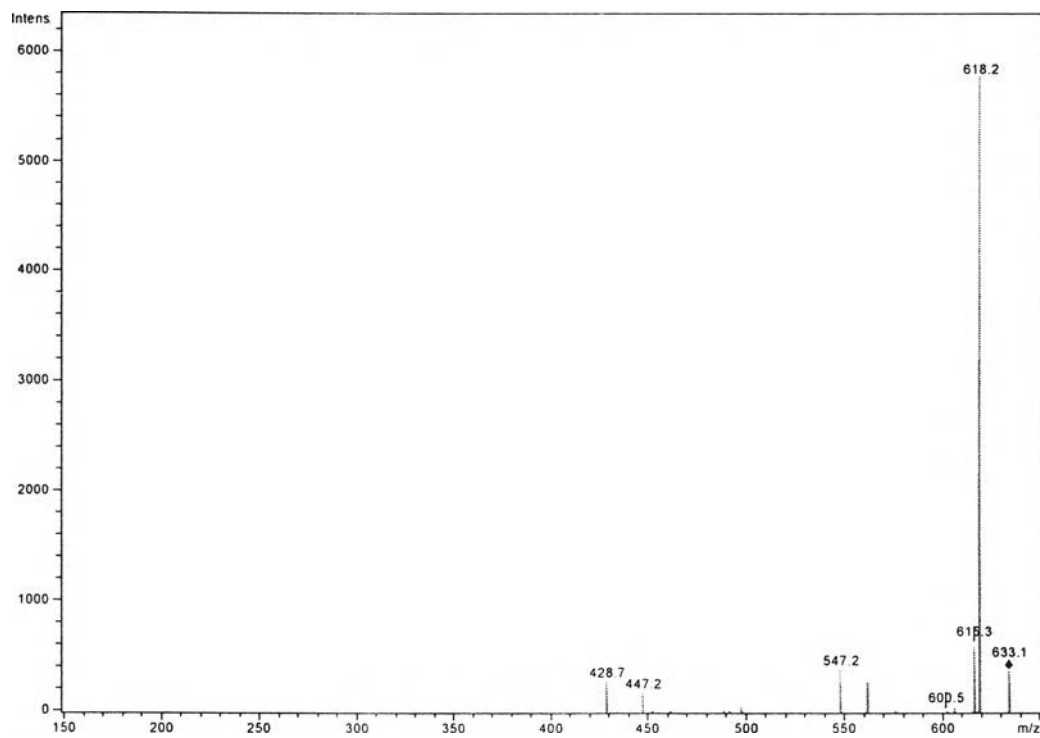


Figure 8 MS/MS spectrum of oryzanol mixture PF1 at m/z 633

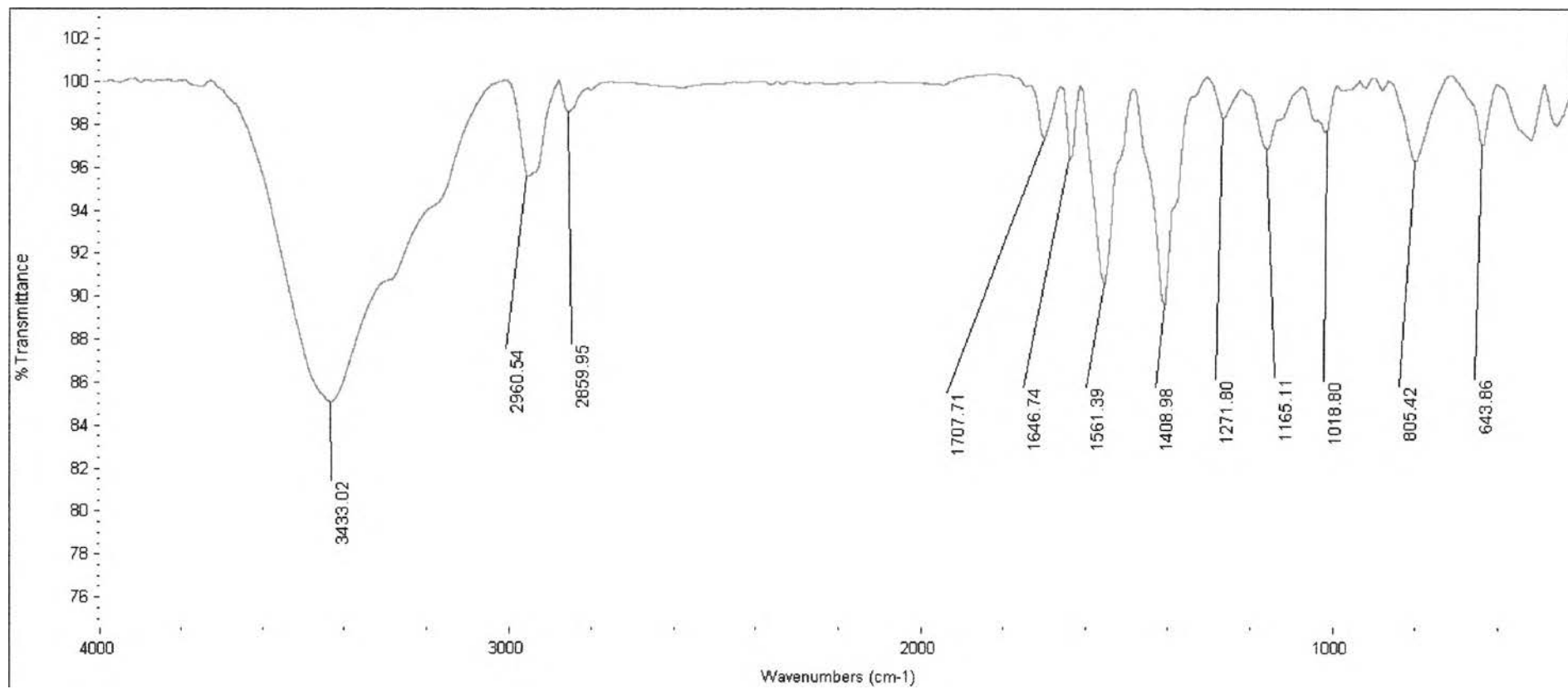


Figure 9 IR spectrum of oryzanol mixture PF2

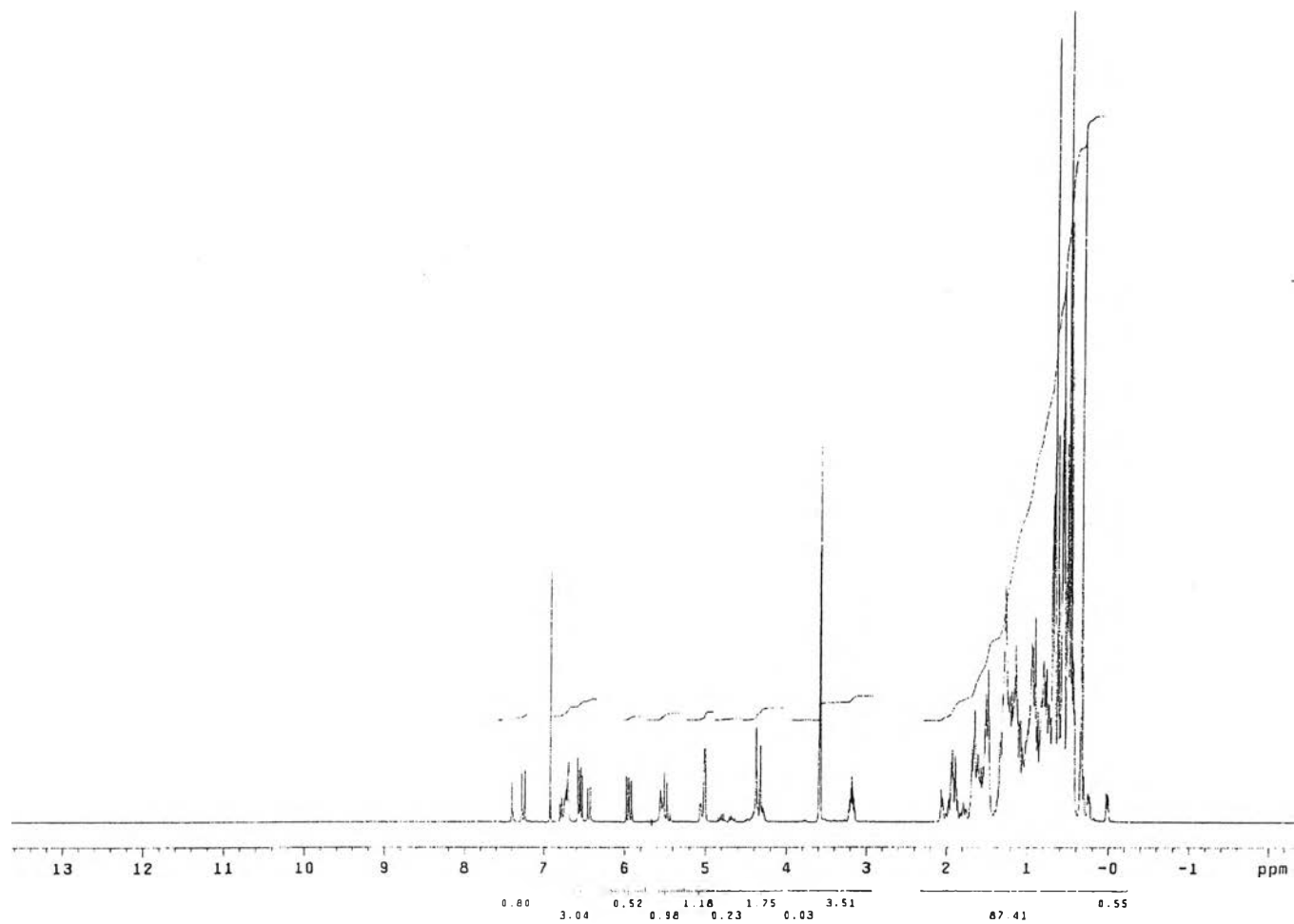


Figure 10 ¹H-NMR spectrum of oryzanol mixture PF2

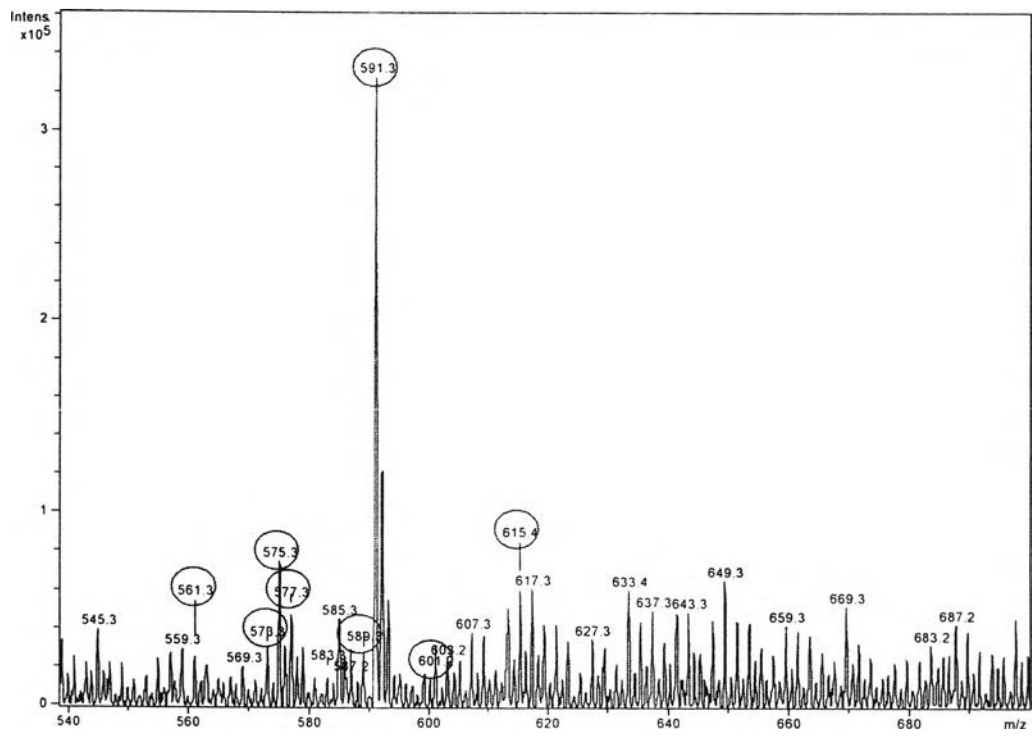
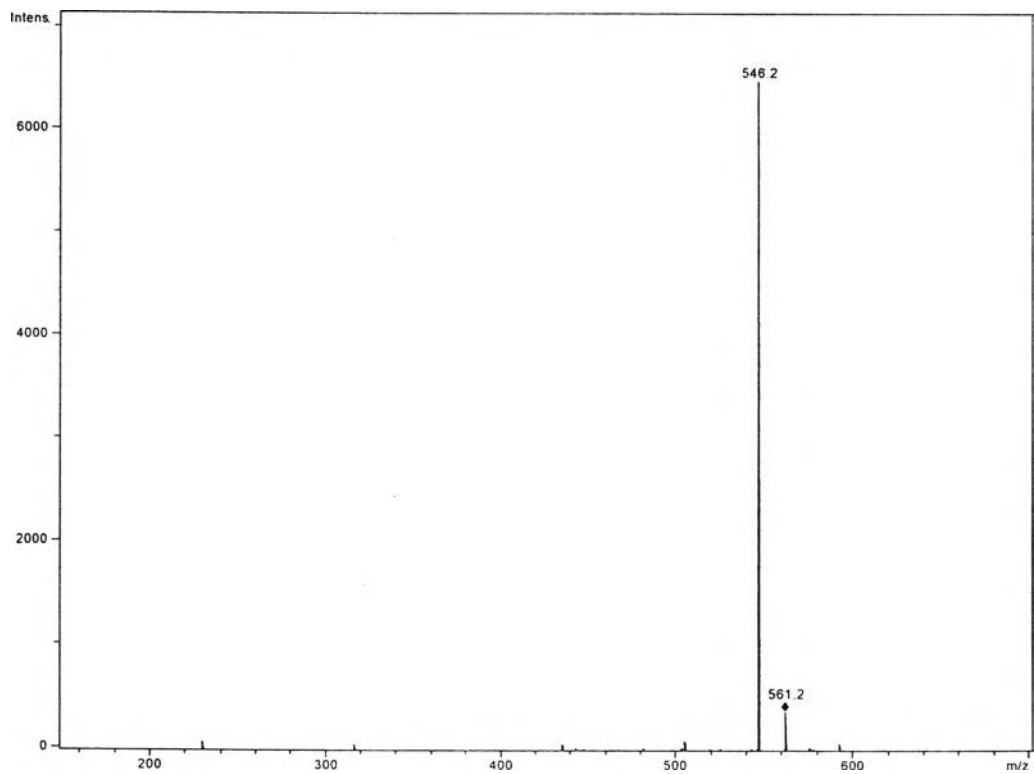


Figure 11 MS spectrum of oryzanol mixture PF2

Figure 12 MS/MS spectrum of oryzanol mixture PF2 at m/z 561

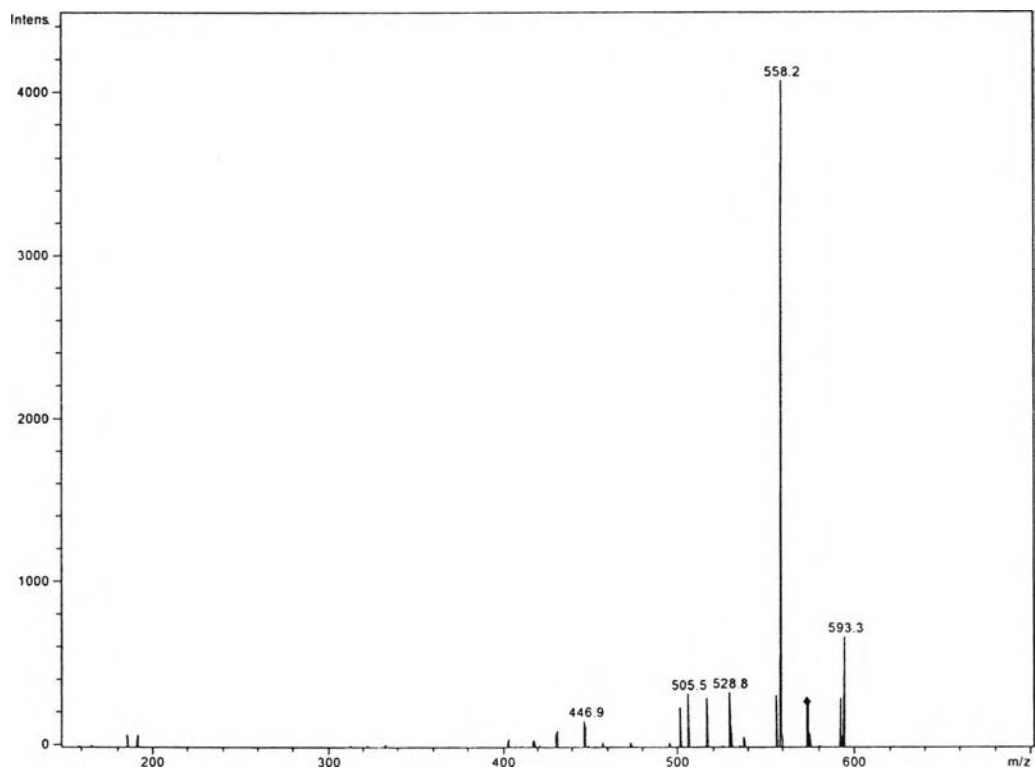


Figure 13 MS/MS spectrum of oryzanol mixture PF2 at m/z 573

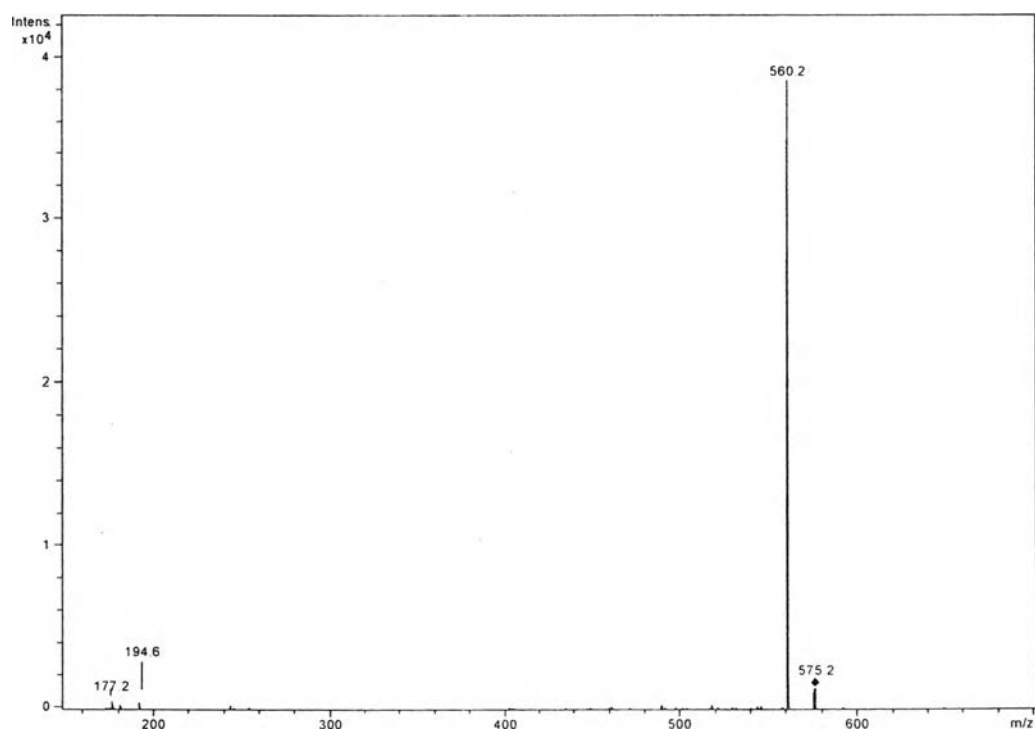


Figure 14 MS/MS spectrum of oryzanol mixture PF2 at m/z 575

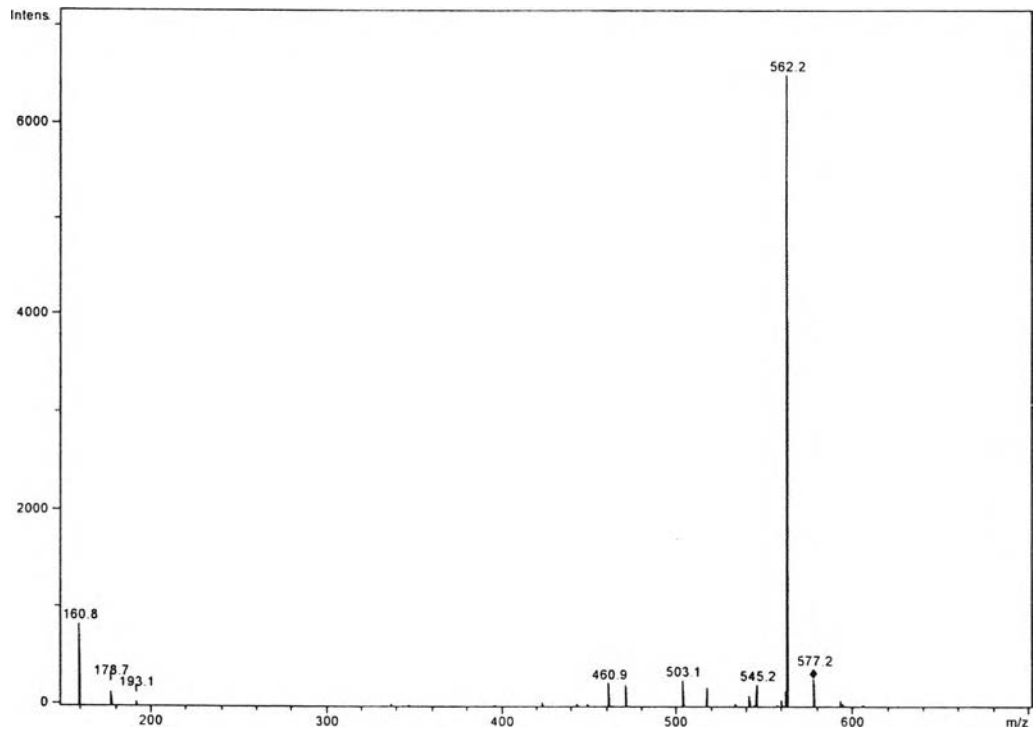


Figure 15 MS/MS spectrum of oryzanol mixture PF2 at m/z 577

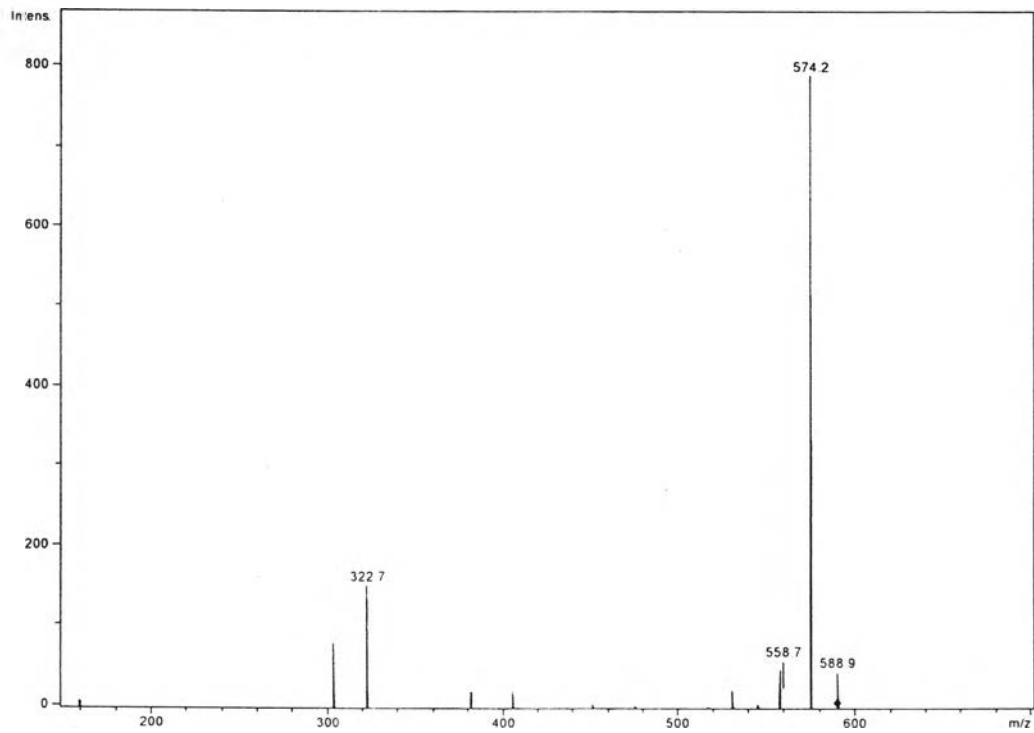
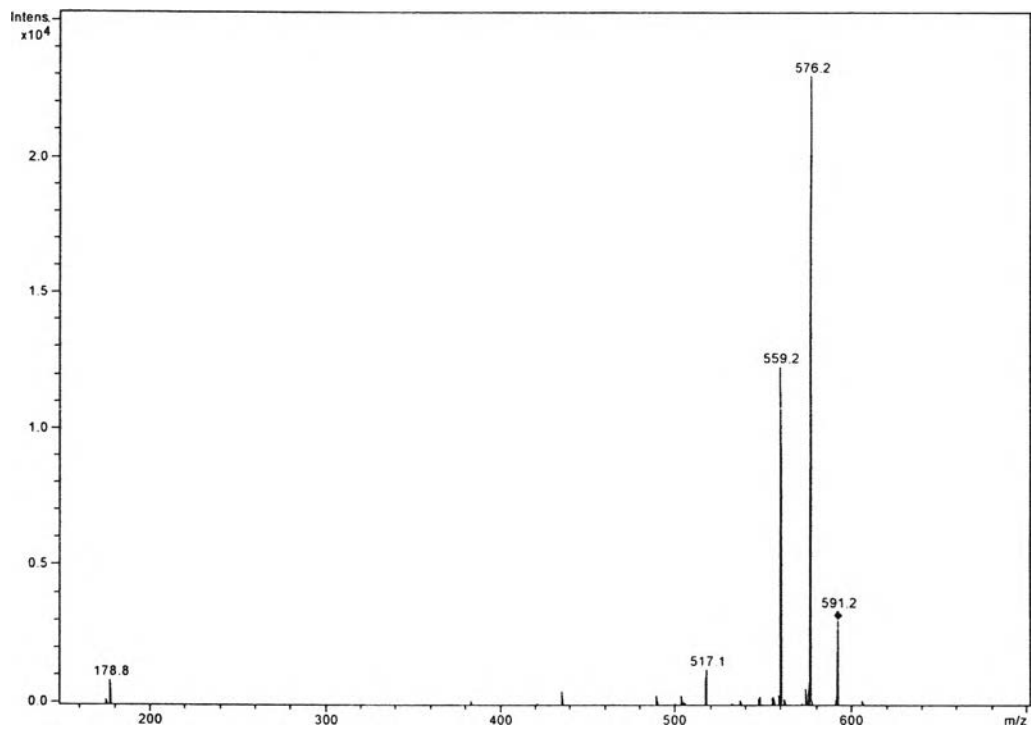
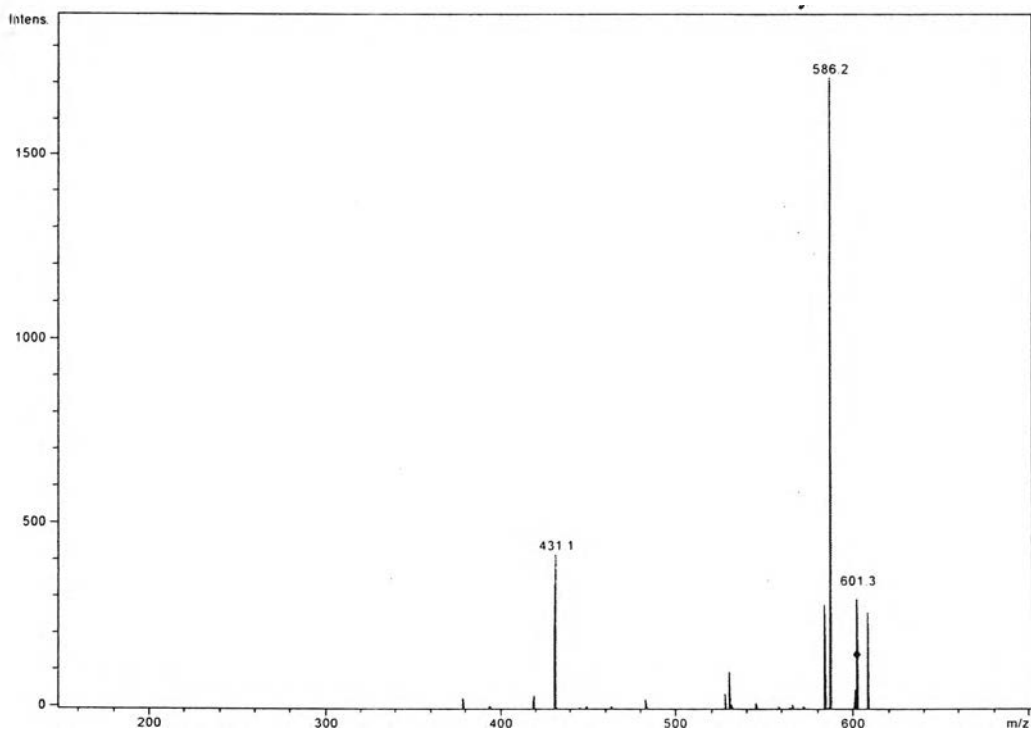


Figure 16 MS/MS spectrum of oryzanol mixture PF2 at m/z 589

Figure 17 MS/MS spectrum of oryzanol mixture PF2 at m/z 591Figure 18 MS/MS spectrum of oryzanol mixture PF2 at m/z 601

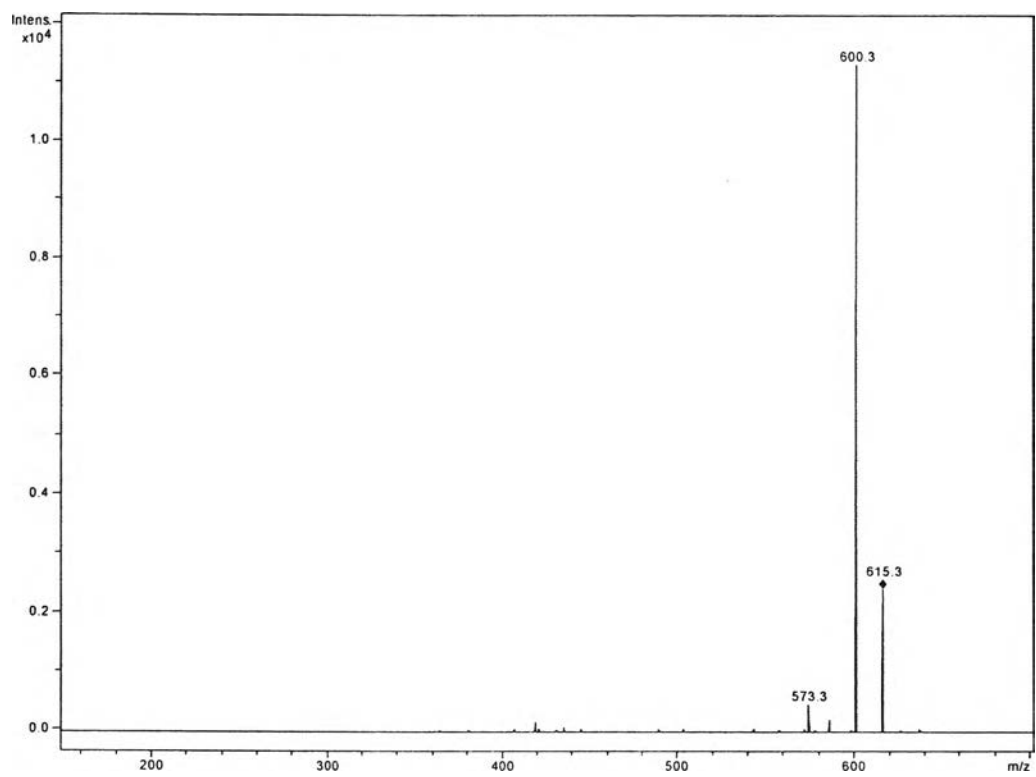


Figure 19 MS/MS spectrum of oryzanol mixture PF2 at m/z 615

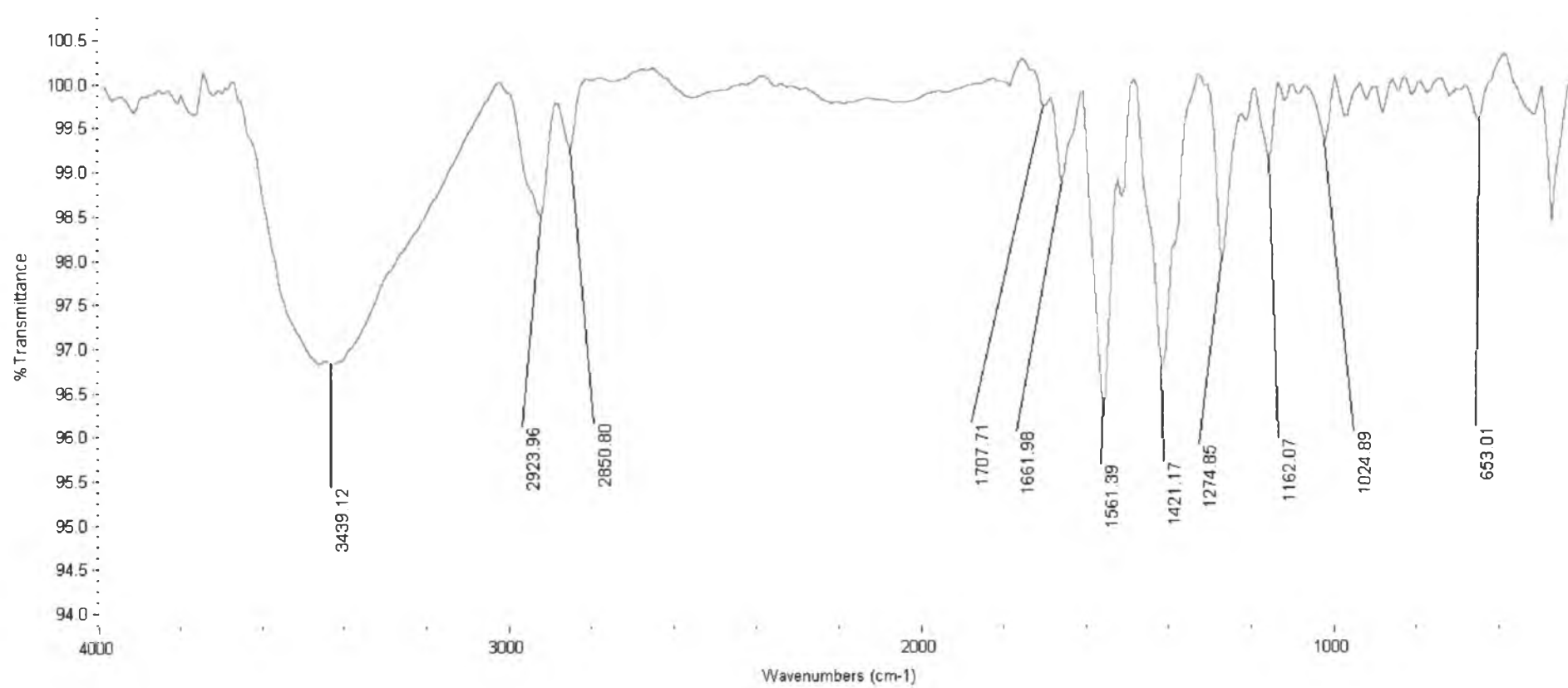


Figure 20 IR spectrum of oryzanol mixture WF1

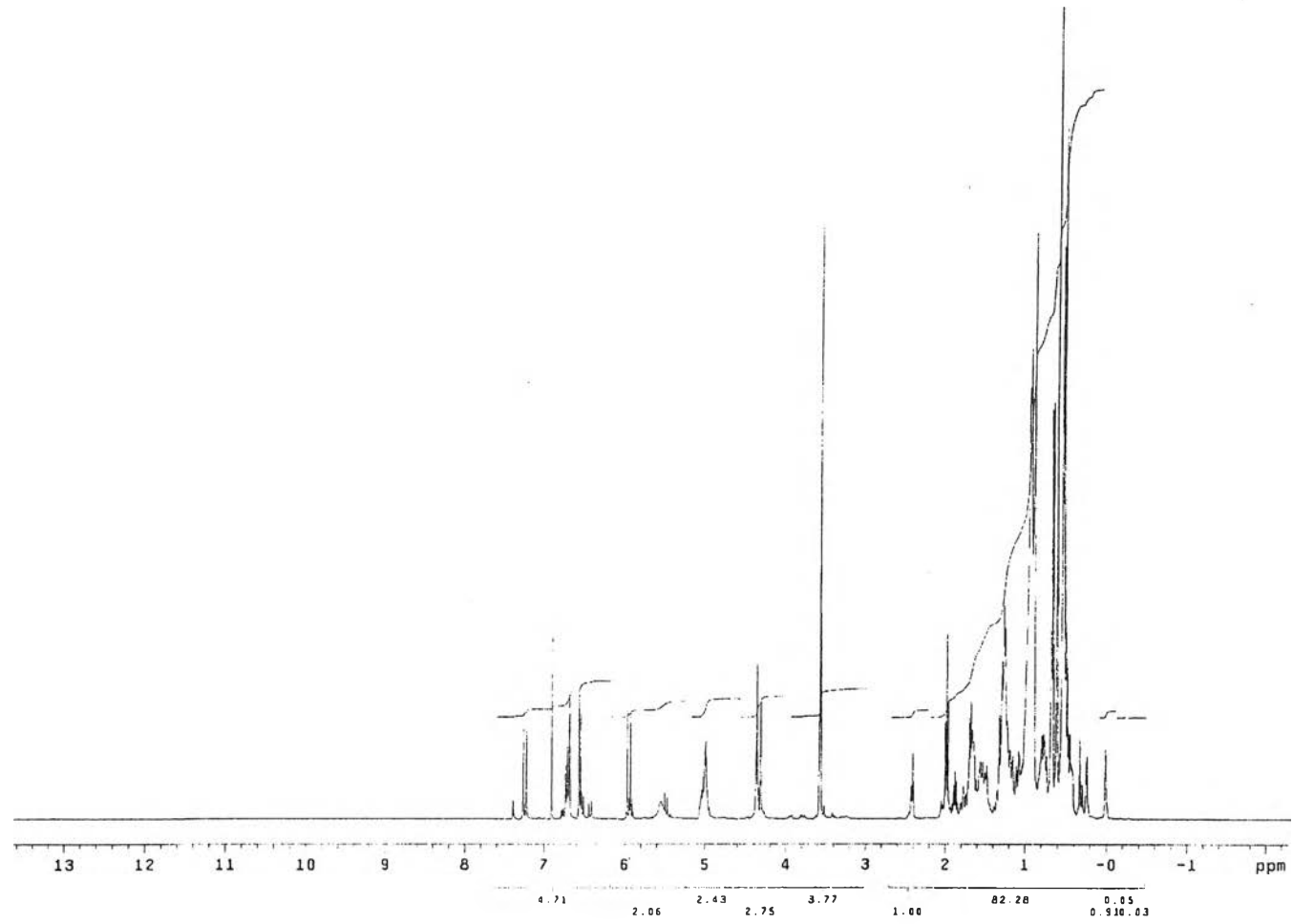


Figure 21 $^1\text{H-NMR}$ spectrum of oryzanol mixture WF1

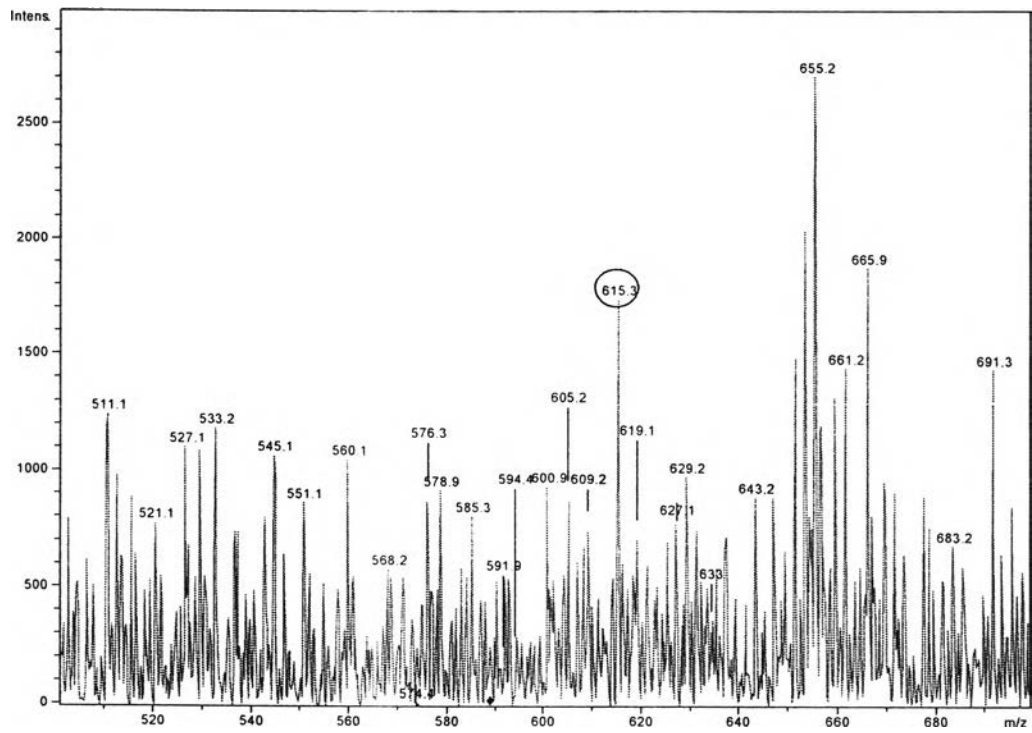
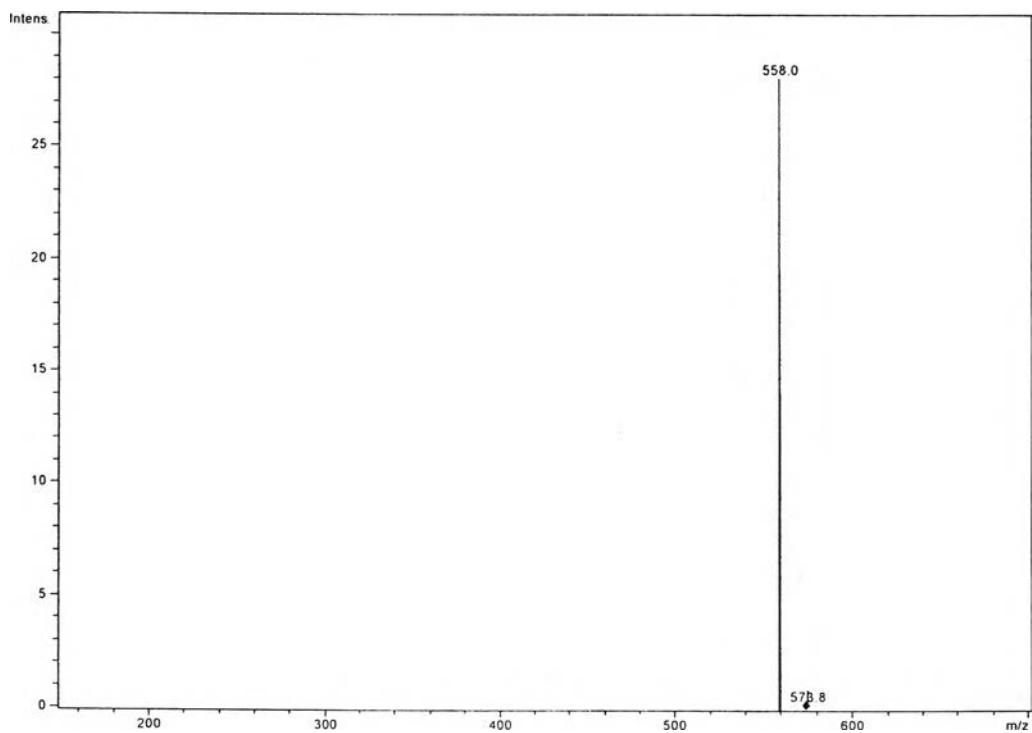


Figure 22 MS spectrum of oryzanol mixture WF1

Figure 23 MS/MS spectrum of oryzanol mixture WF1 at m/z 573

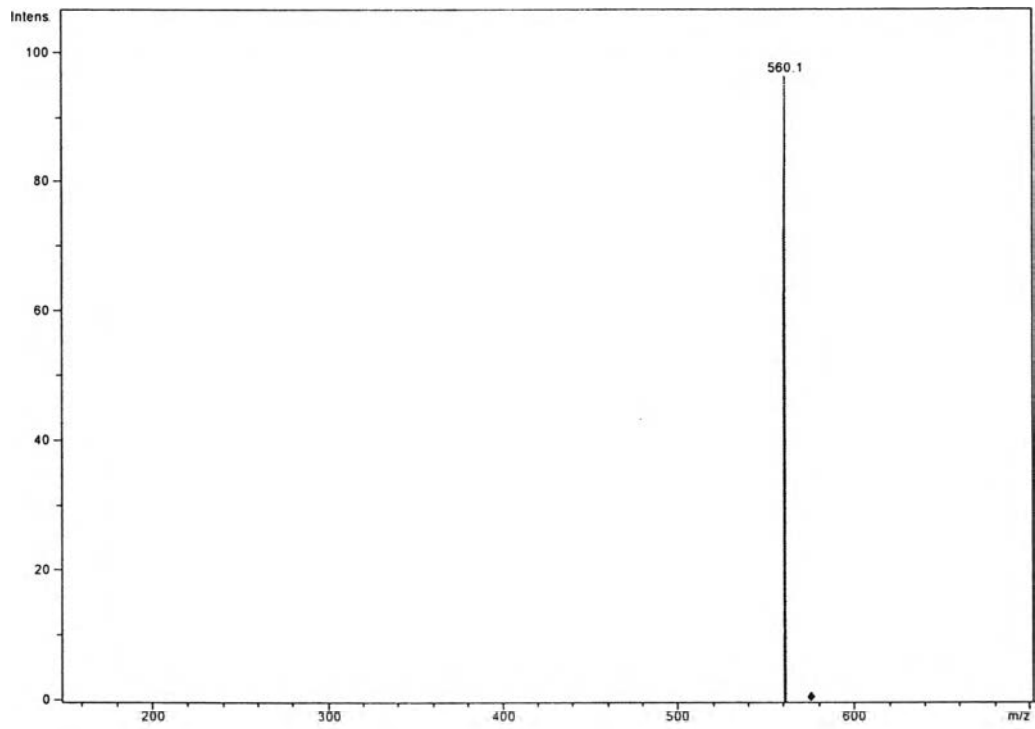


Figure 24 MS/MS spectrum of oryzanol mixture WF1 at m/z 575

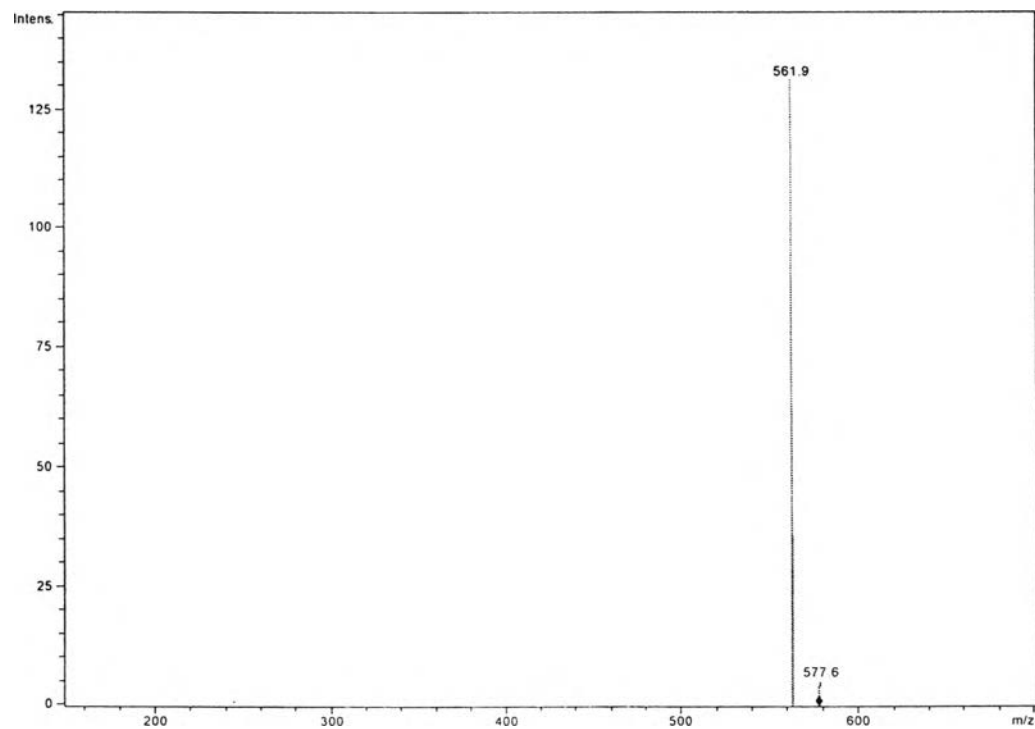


Figure 25 MS/MS spectrum of oryzanol mixture WF1 at m/z 577

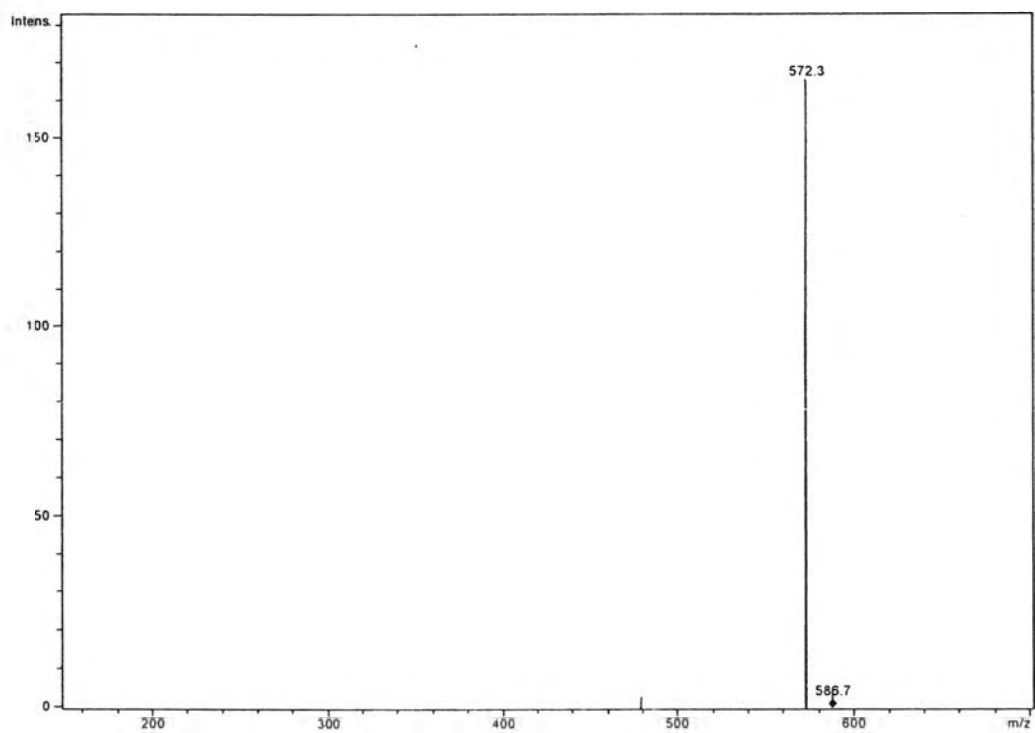


Figure 26 MS/MS spectrum of oryzanol mixture WF1 at m/z 587

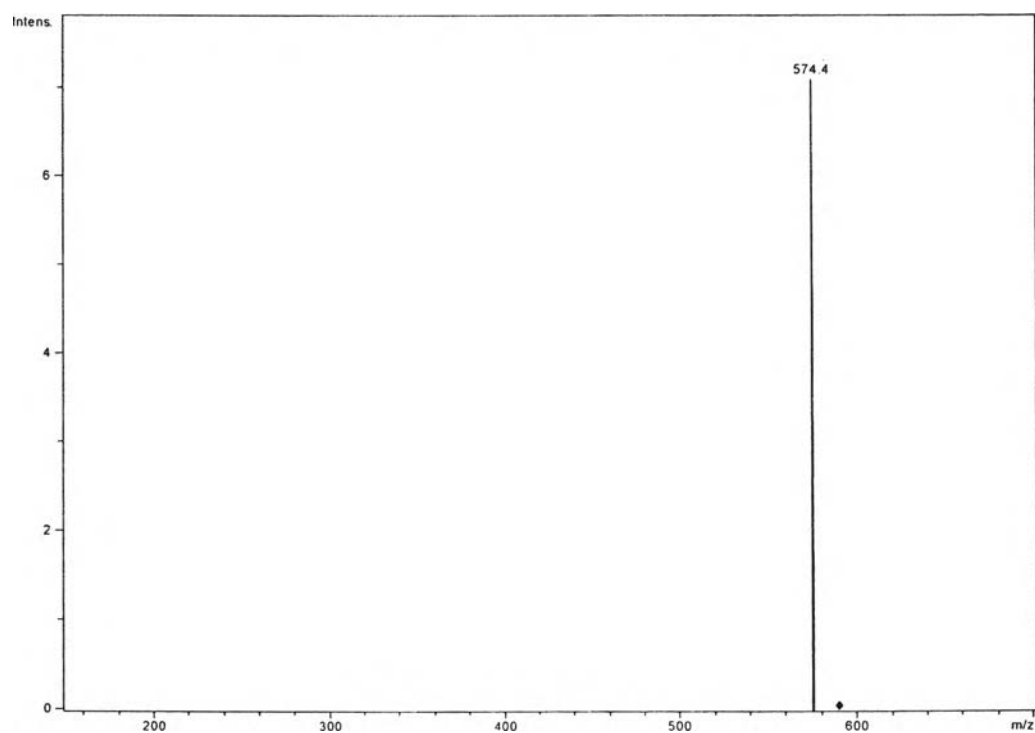


Figure 27 MS/MS spectrum of oryzanol mixture WF1 at m/z 589

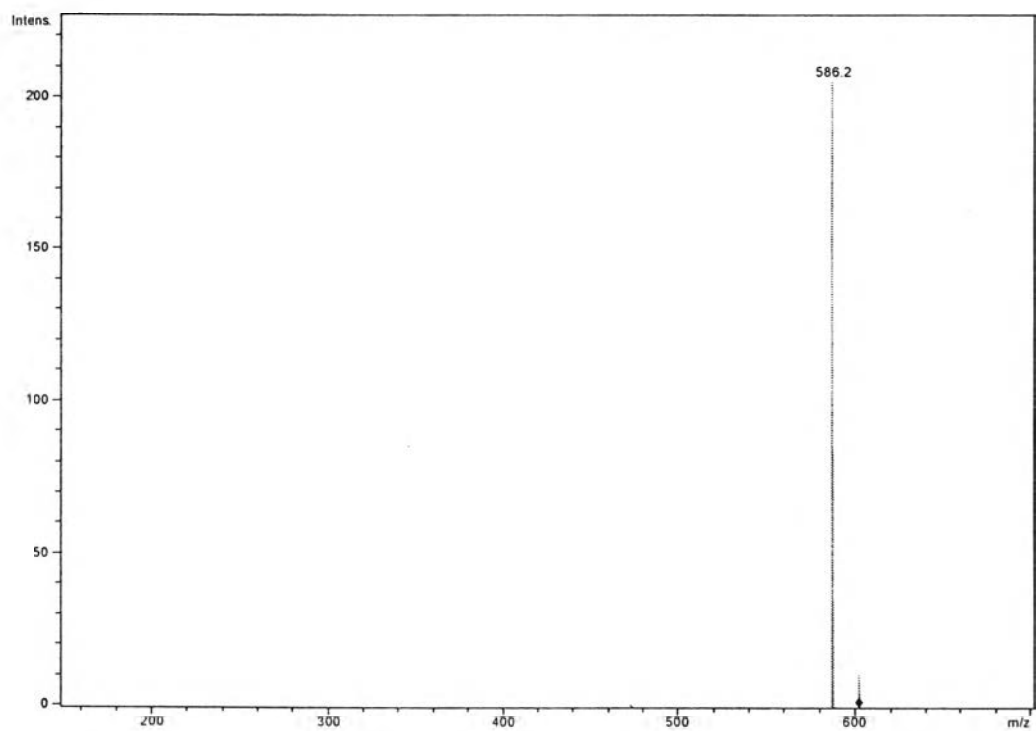


Figure 28 MS/MS spectrum of oryzanol mixture WF1 at m/z 601

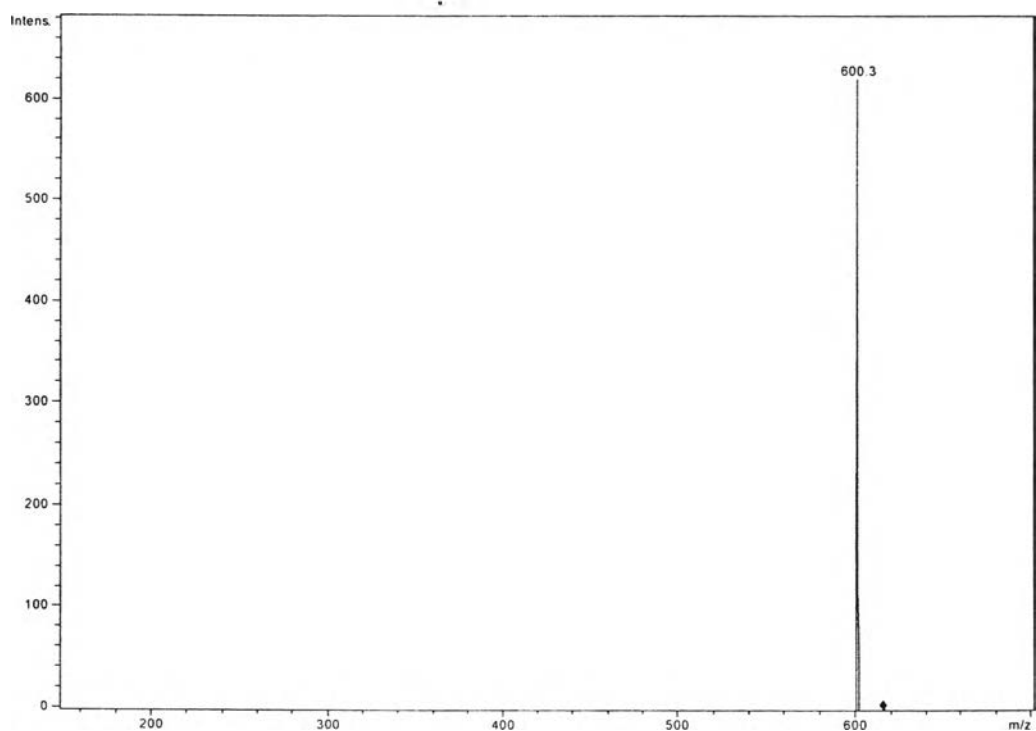


Figure 29 MS/MS spectrum of oryzanol mixture WF1 at m/z 615

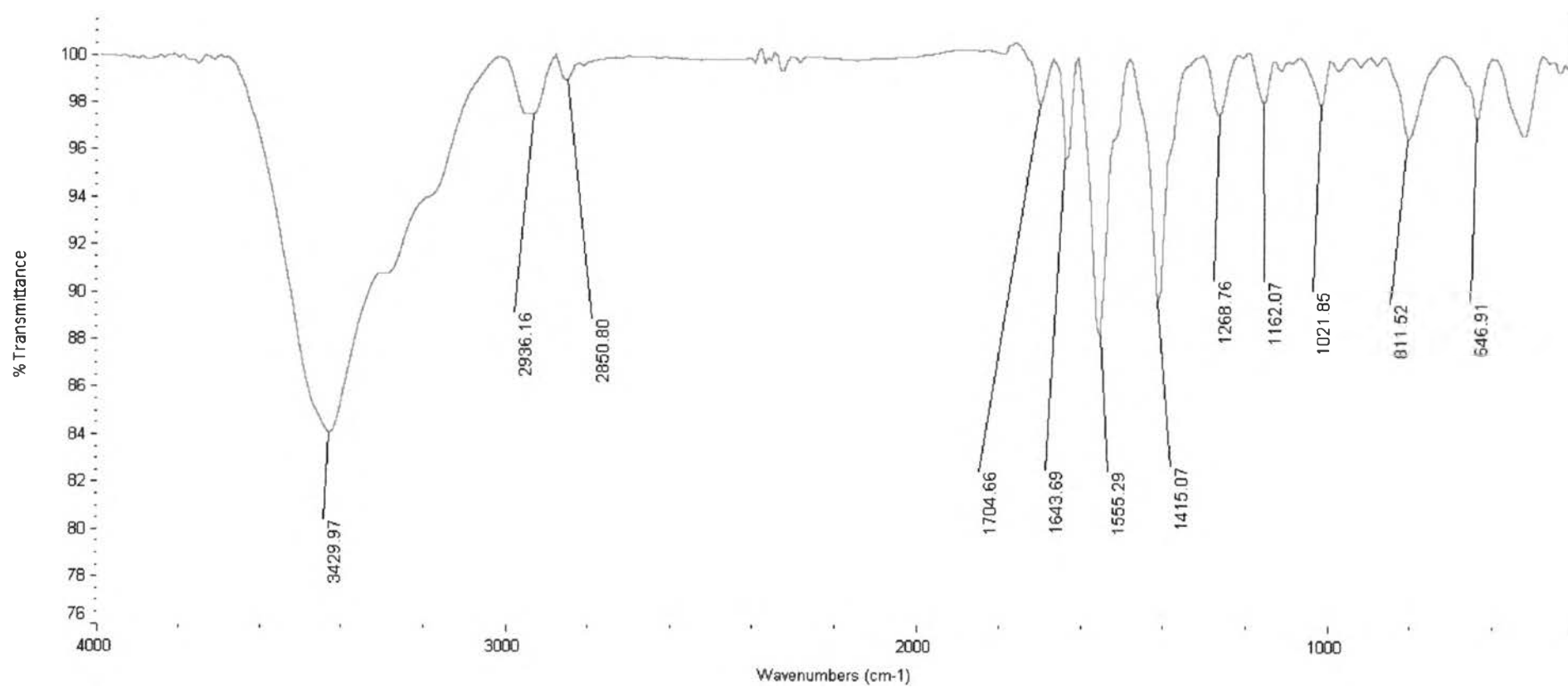


Figure 30 IR spectrum of oryzanol mixture SF1

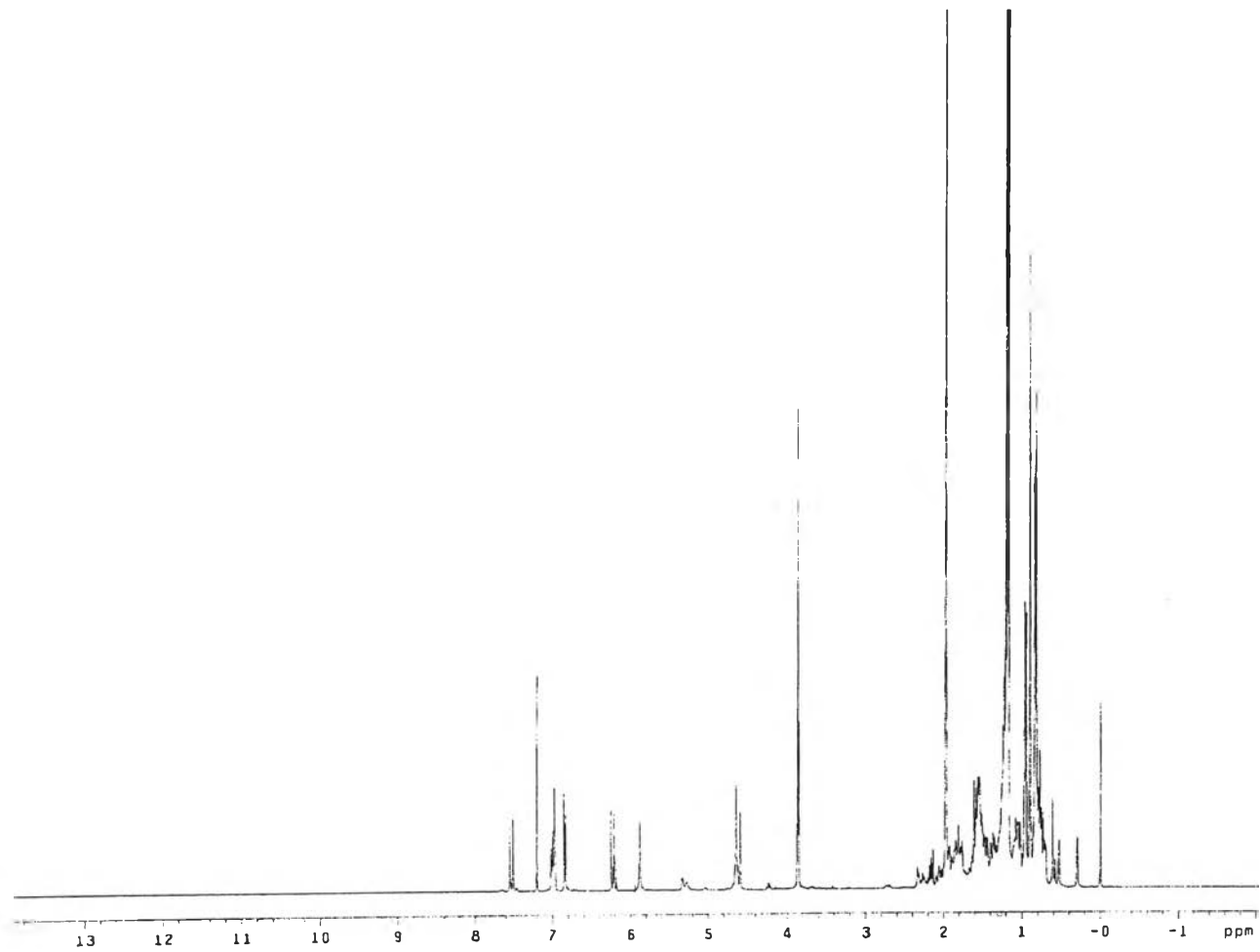


Figure 31 $^1\text{H-NMR}$ spectrum of oryzanol mixture SF1

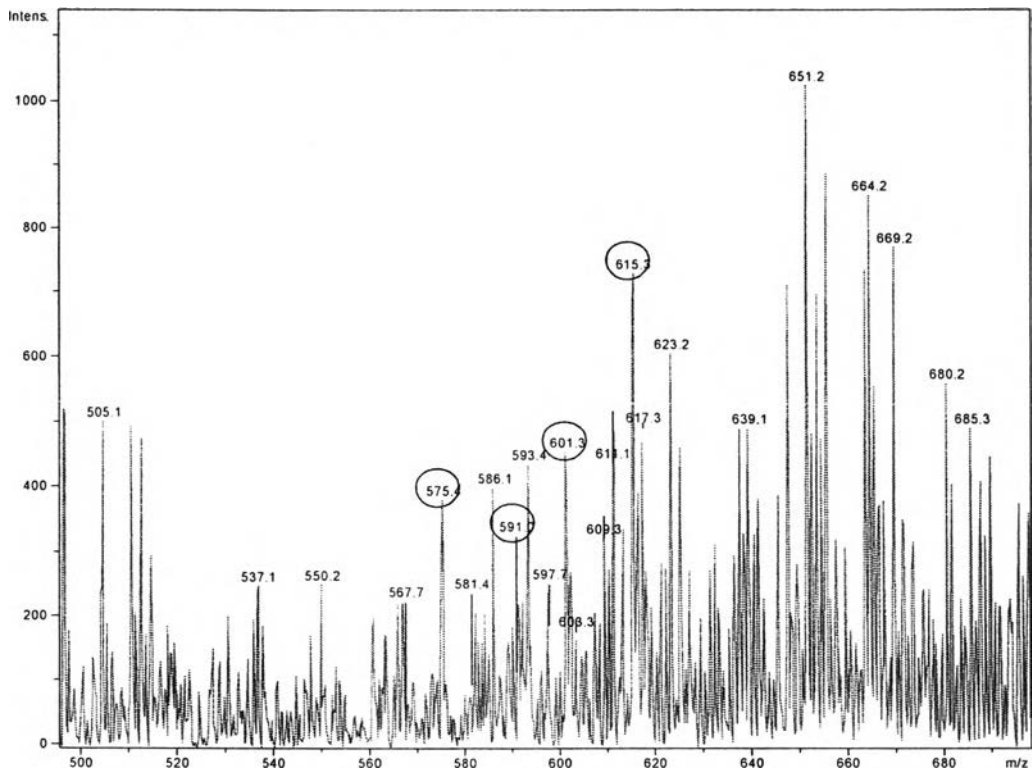
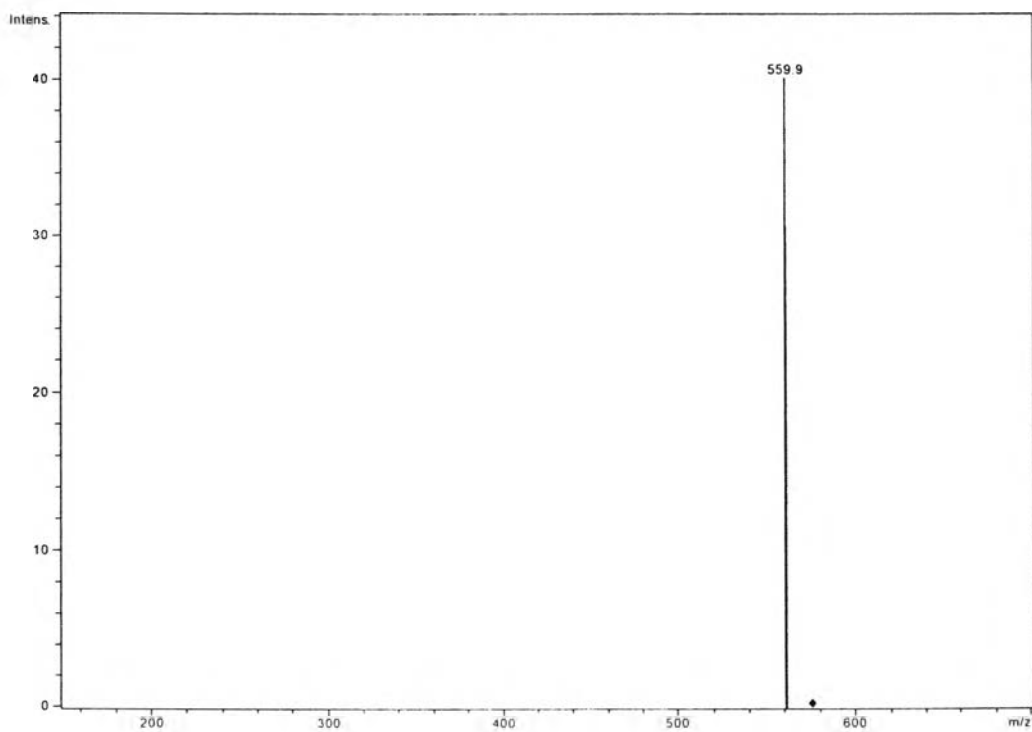
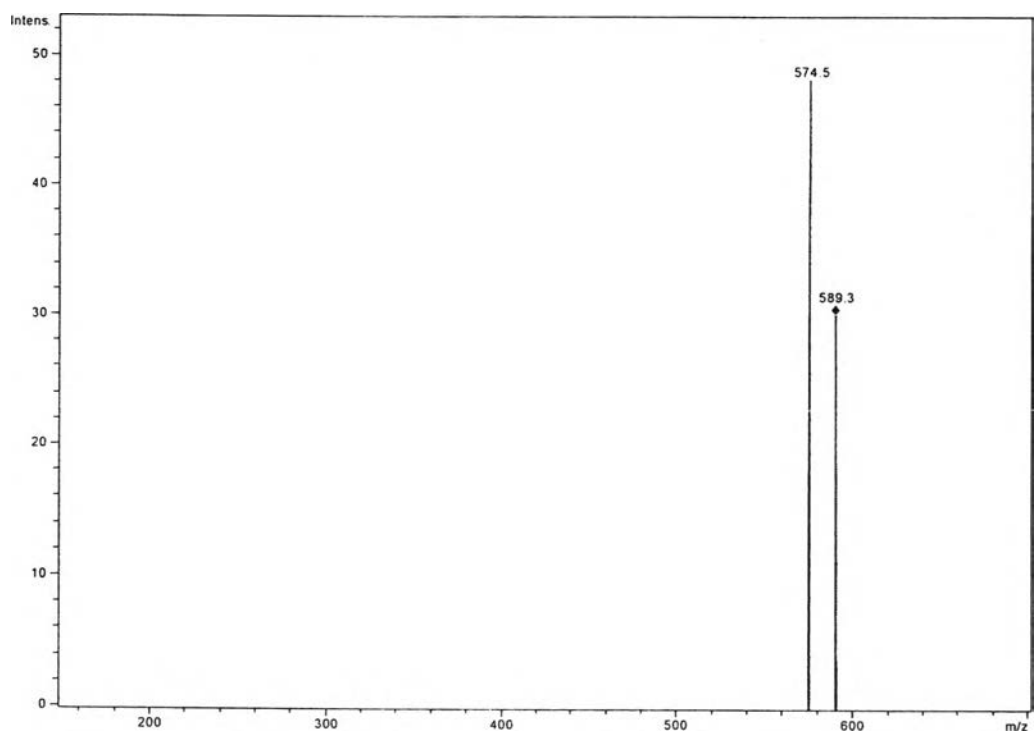
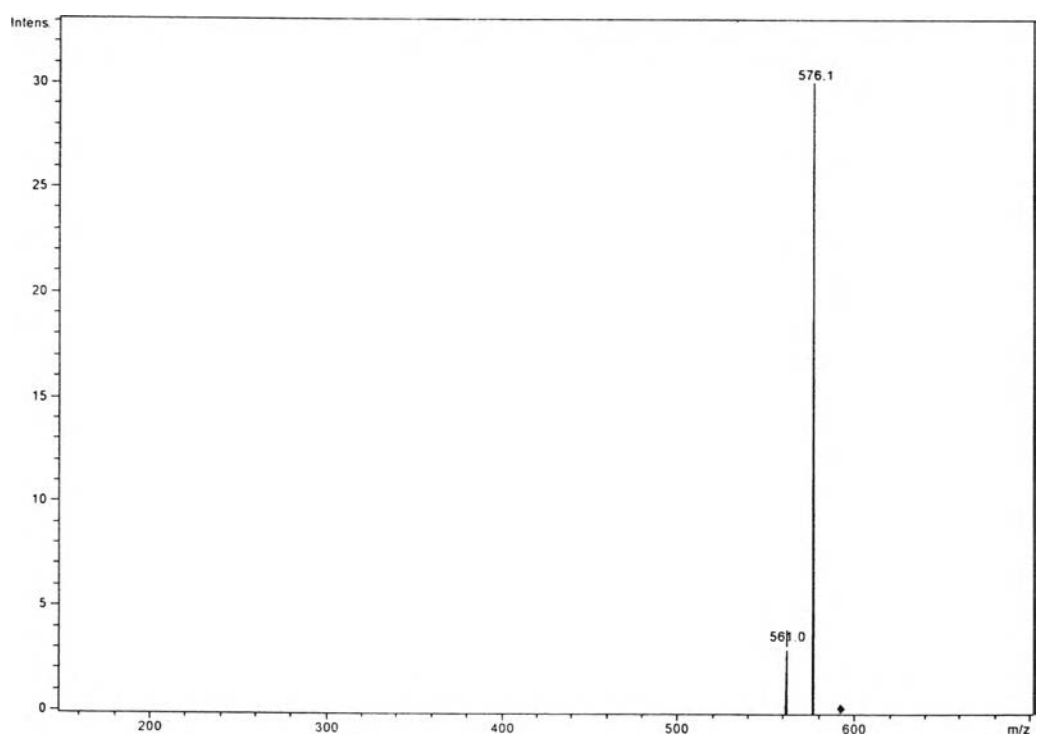


Figure 32 MS spectrum of oryzanol mixture SF1

Figure 33 MS/MS spectrum of oryzanol mixture SF1 at m/z 575

Figure 34 MS/MS spectrum of oryzanol mixture SF1 at m/z 589Figure 35 MS/MS spectrum of oryzanol mixture SF1 at m/z 591

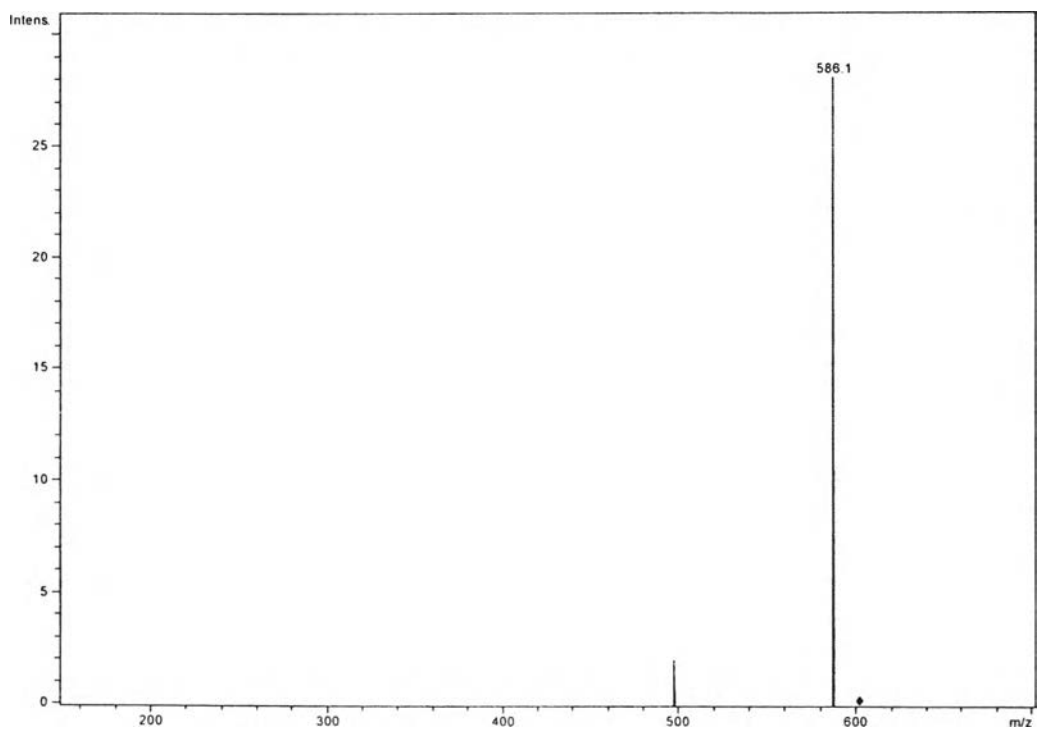


Figure 36 MS/MS spectrum of oryzanol mixture SF1 at m/z 601

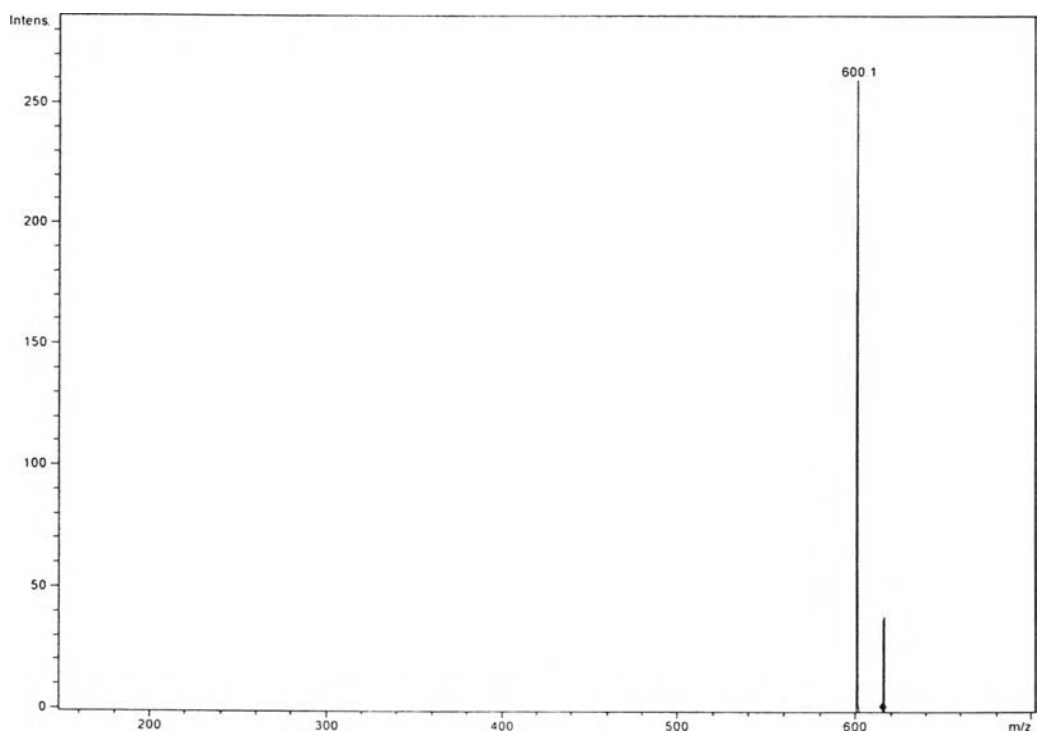


Figure 37 MS/MS spectrum of oryzanol mixture SF1 at m/z 615

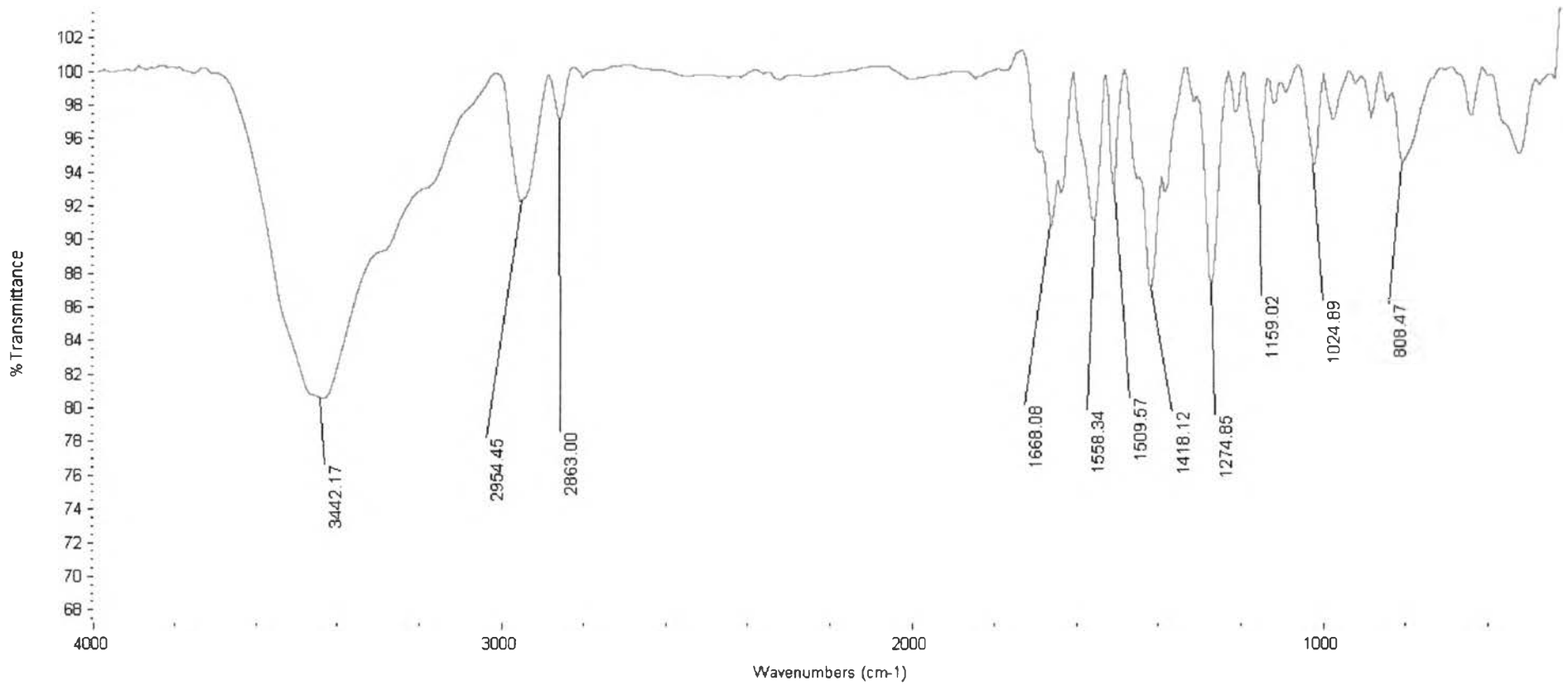


Figure 38 IR spectrum of oryzanol mixture CF1

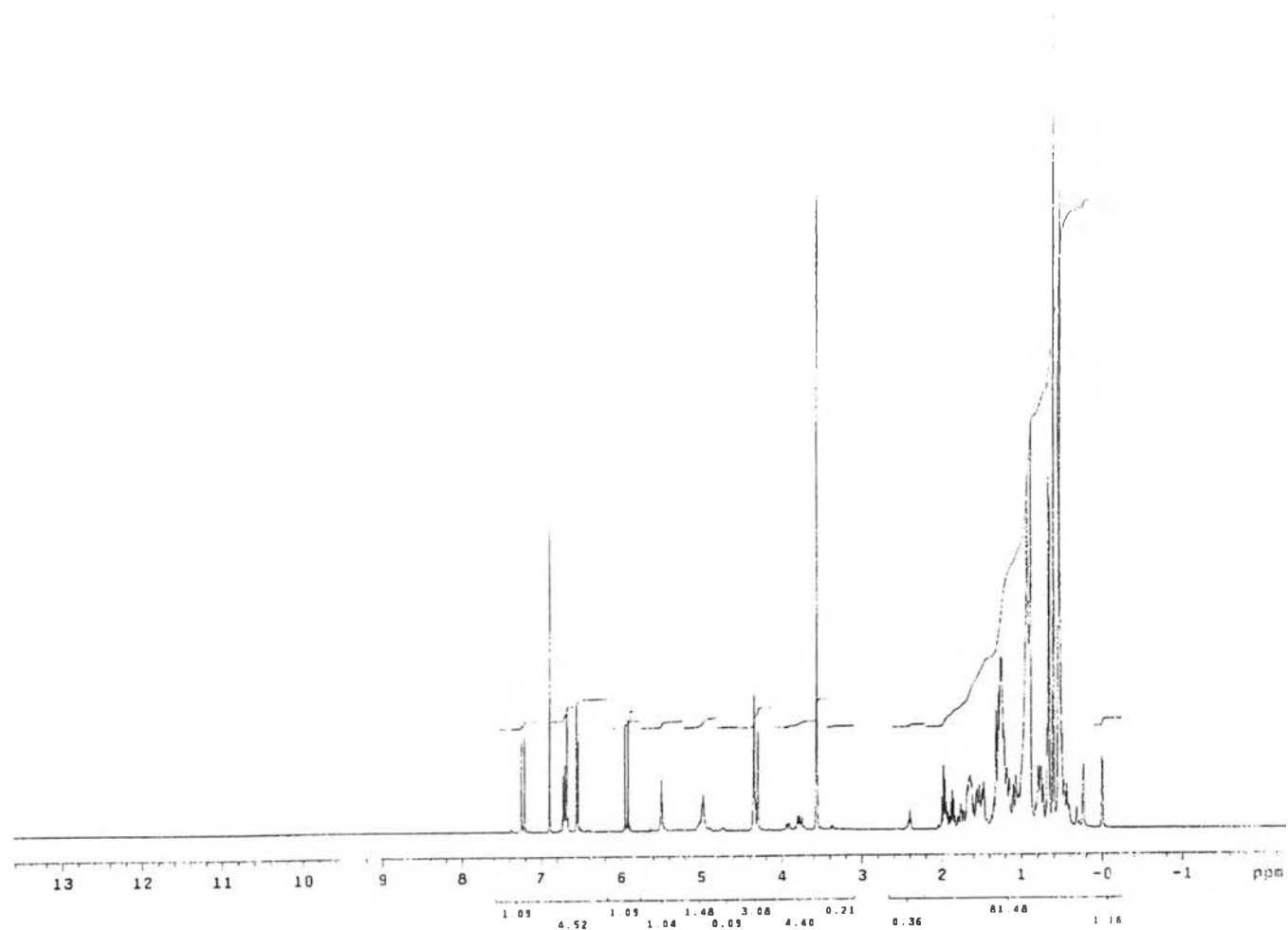


Figure 39 ¹H-NMR spectrum of oryzanol mixture CF1

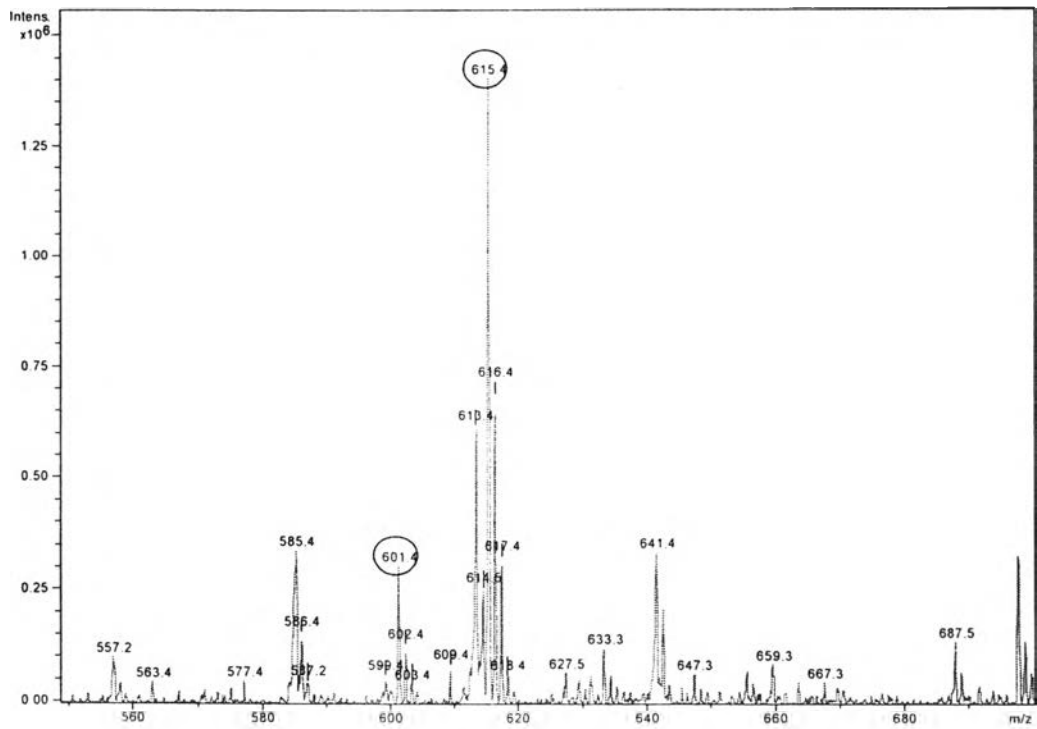


Figure 40 MS spectrum of oryzanol mixture CF1

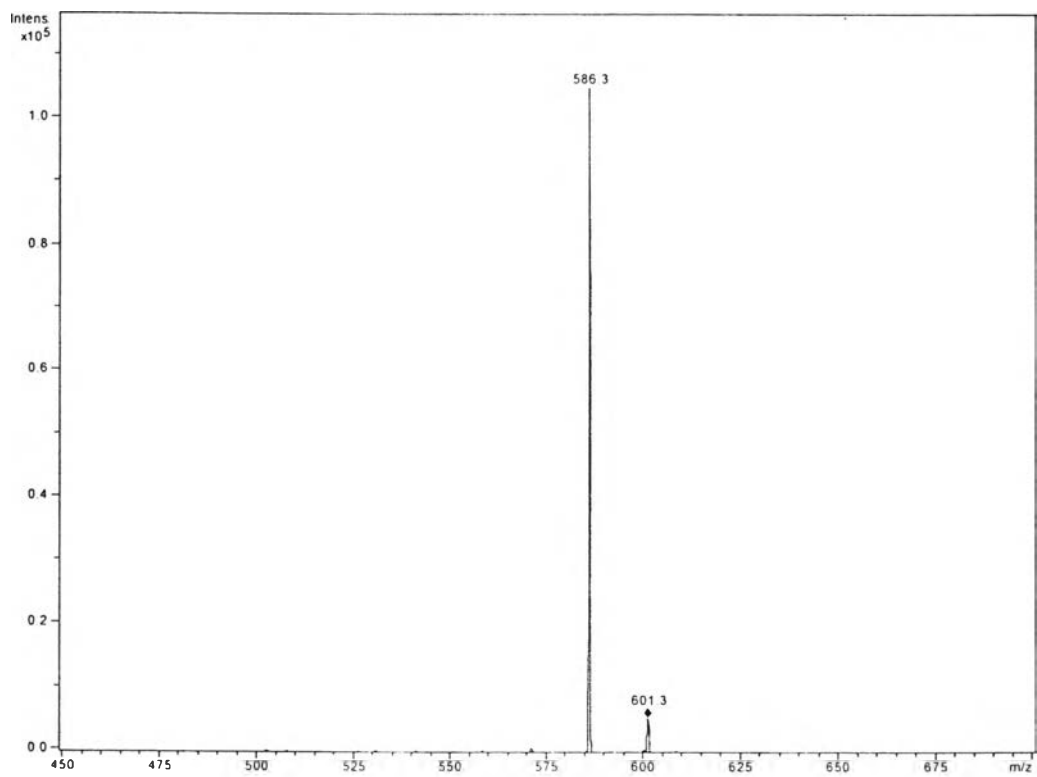


Figure 41 MS/MS spectrum of oryzanol mixture CF1 at m/z 601

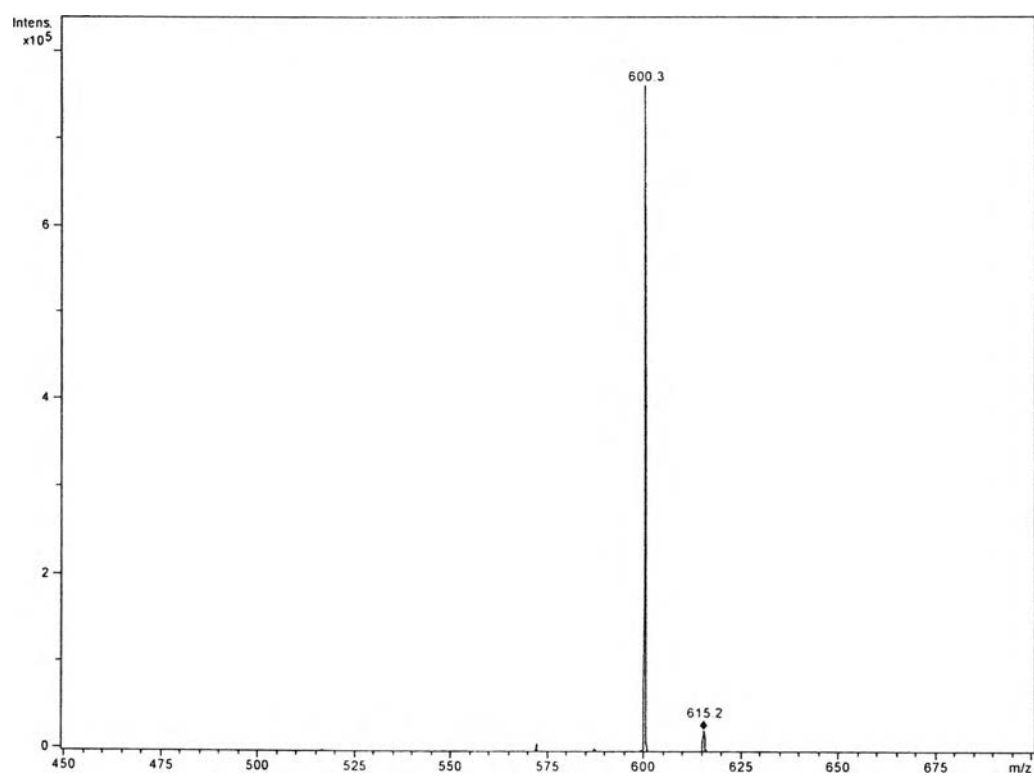


Figure 42 MS/MS spectrum of oryzanol mixture CF1 at m/z 615

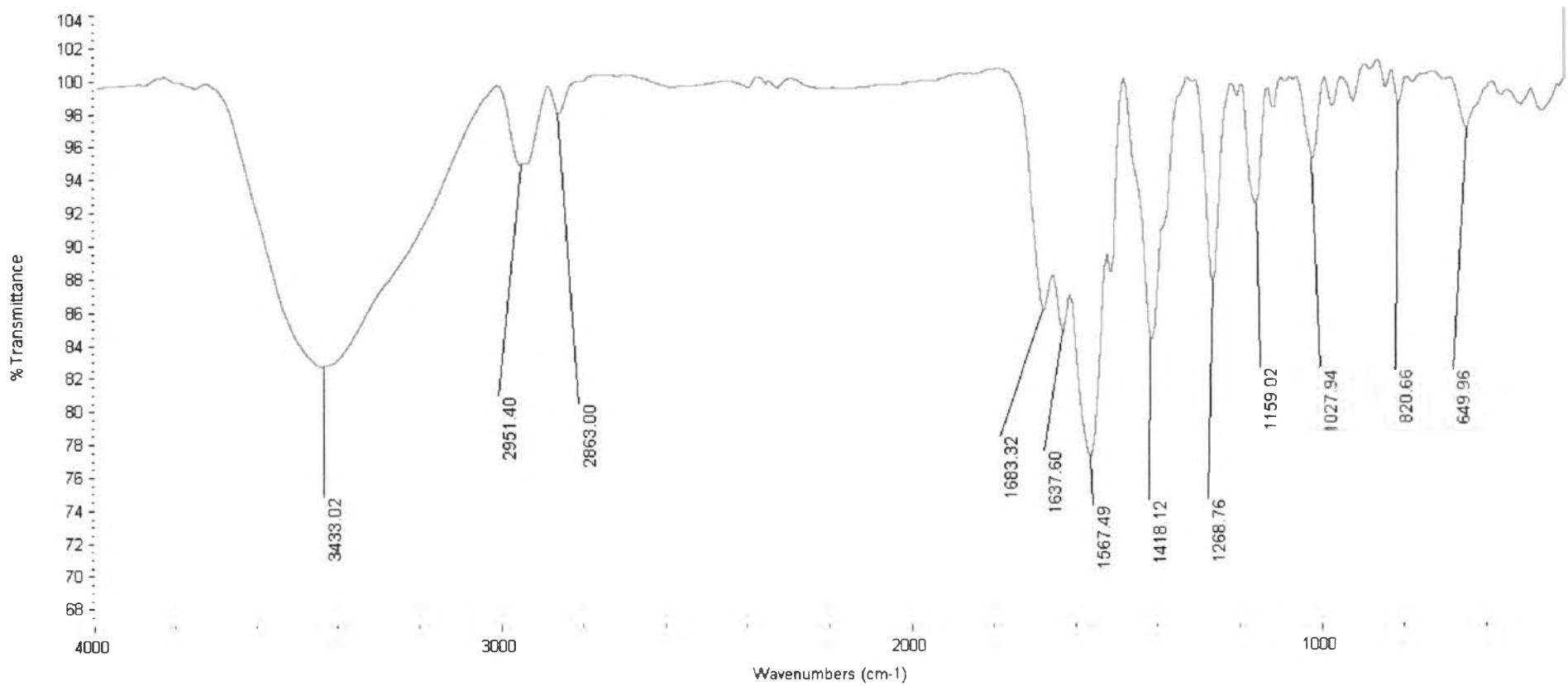


Figure 43 IR spectrum of standard oryzanol

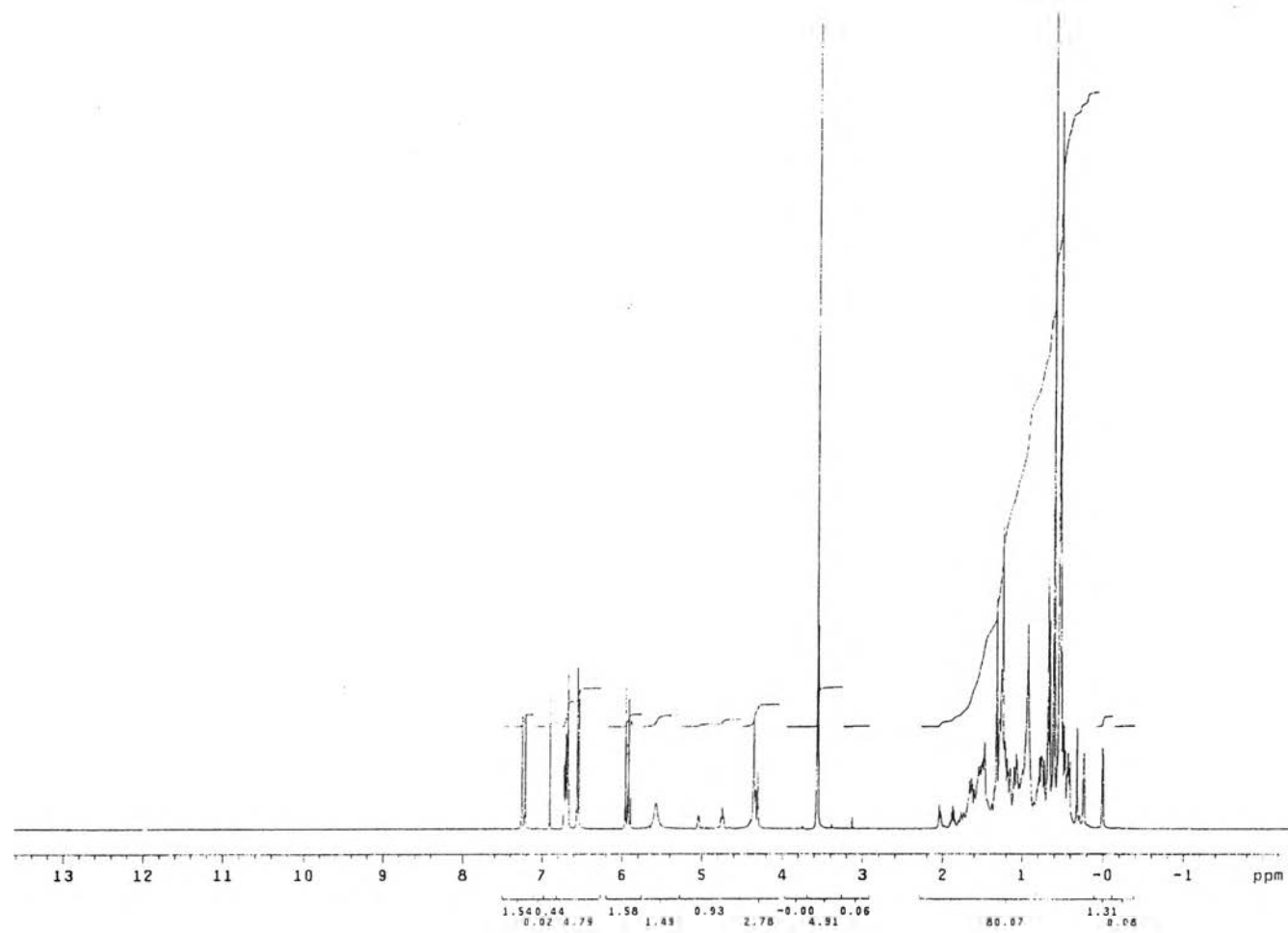


Figure 44 $^1\text{H-NMR}$ spectrum of standard oryzanol

Appendix B

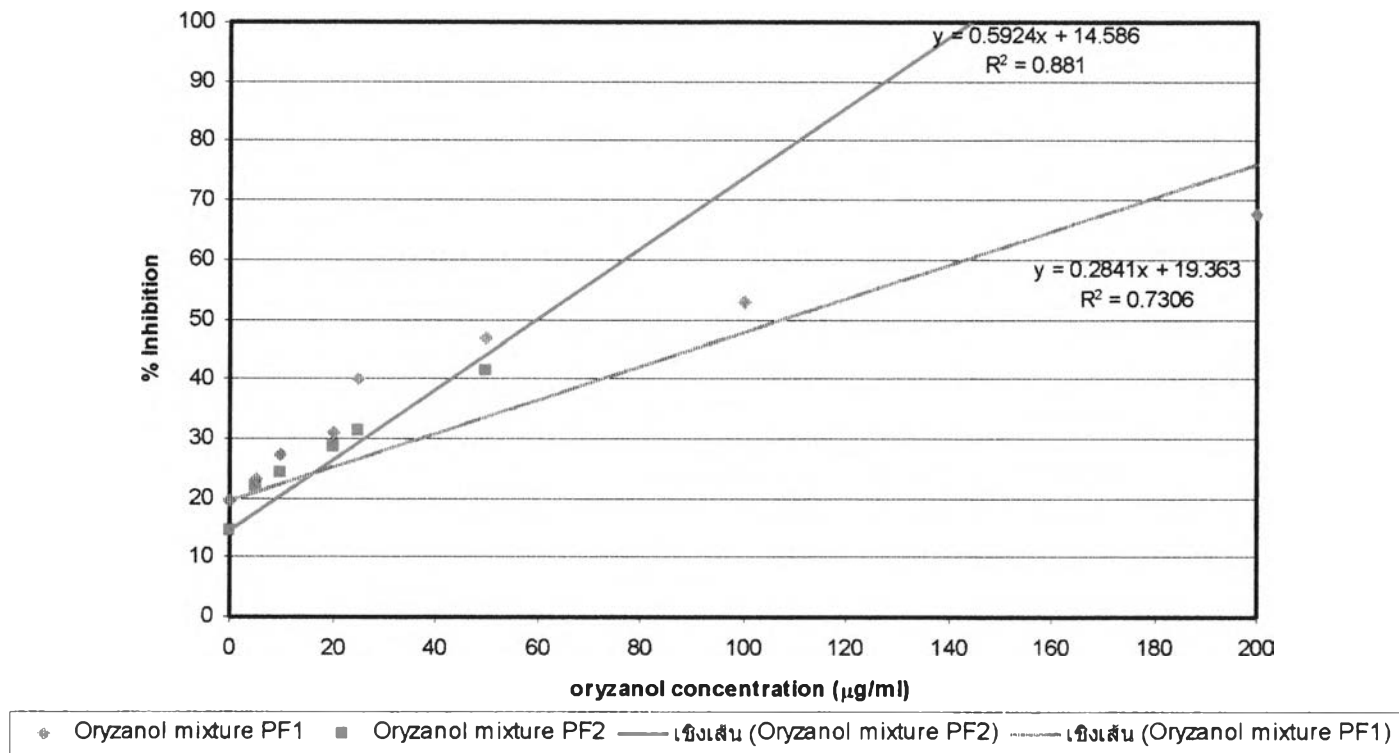


Figure 1 Antioxidant activity of Pathumthani 1 extracts

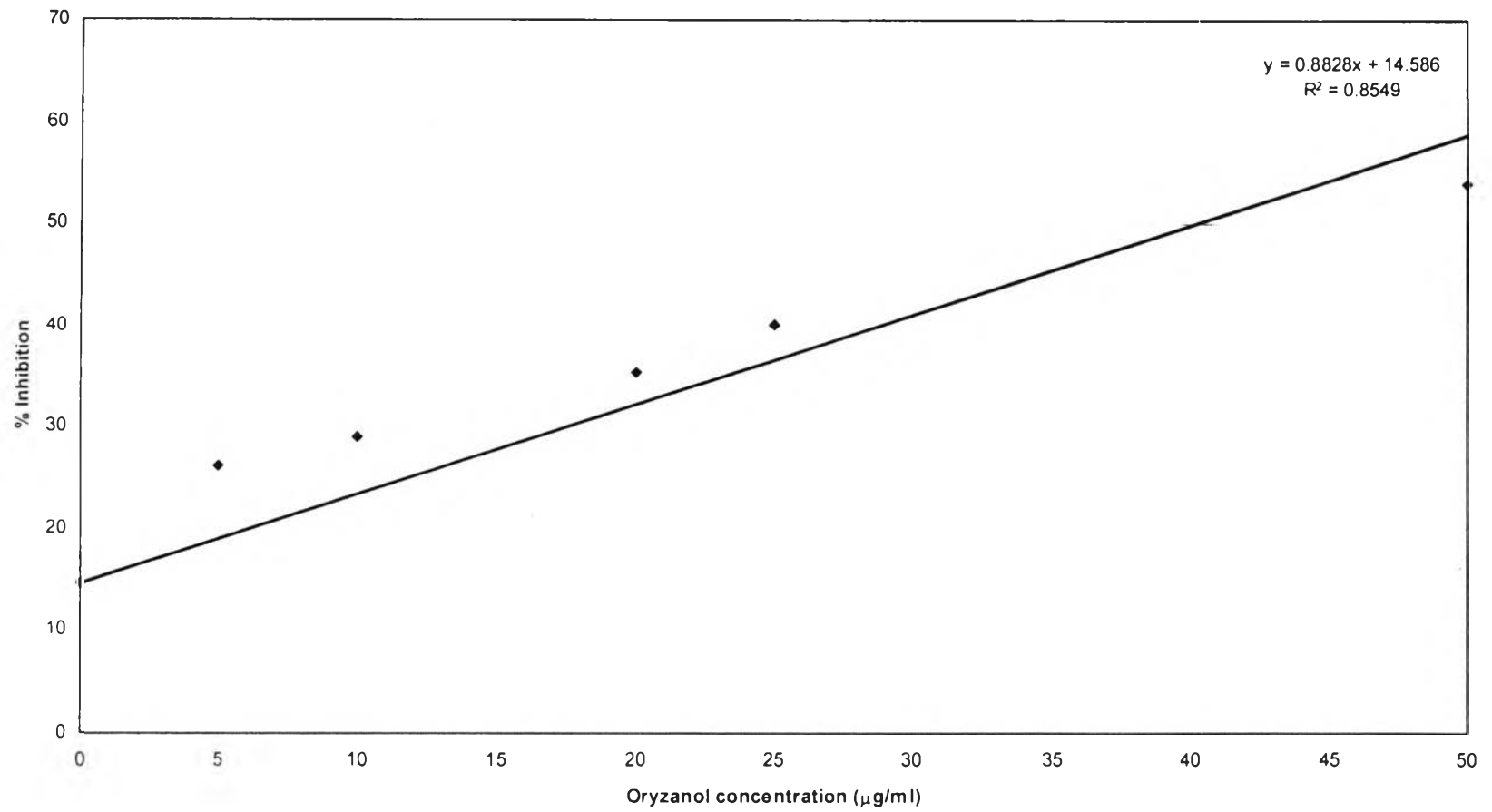


Figure 2 Antioxidant activity of Kao Dok Mali 105 extracts

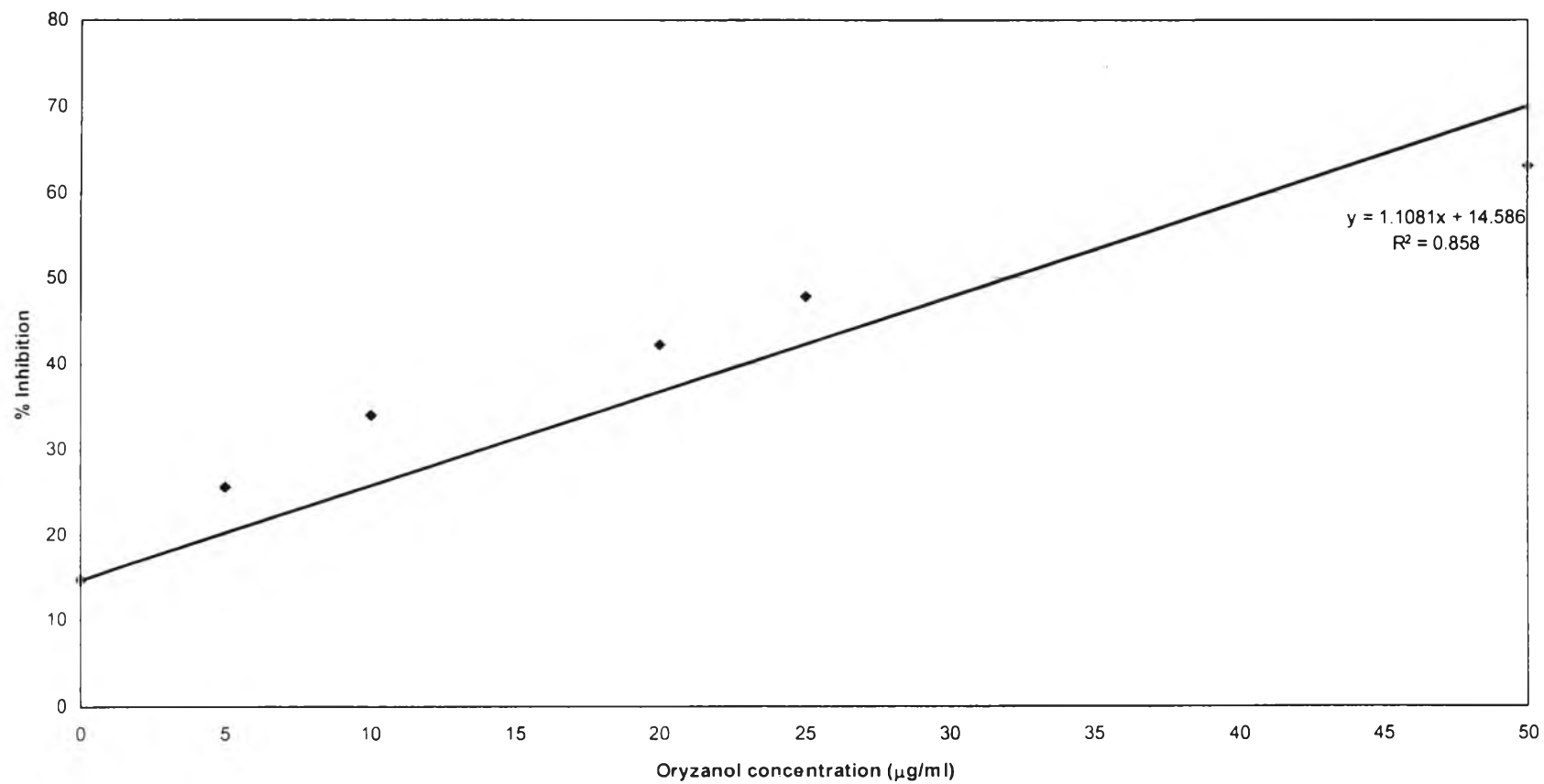


Figure 3 Antioxidant activity of Sunpatong 1 extracts

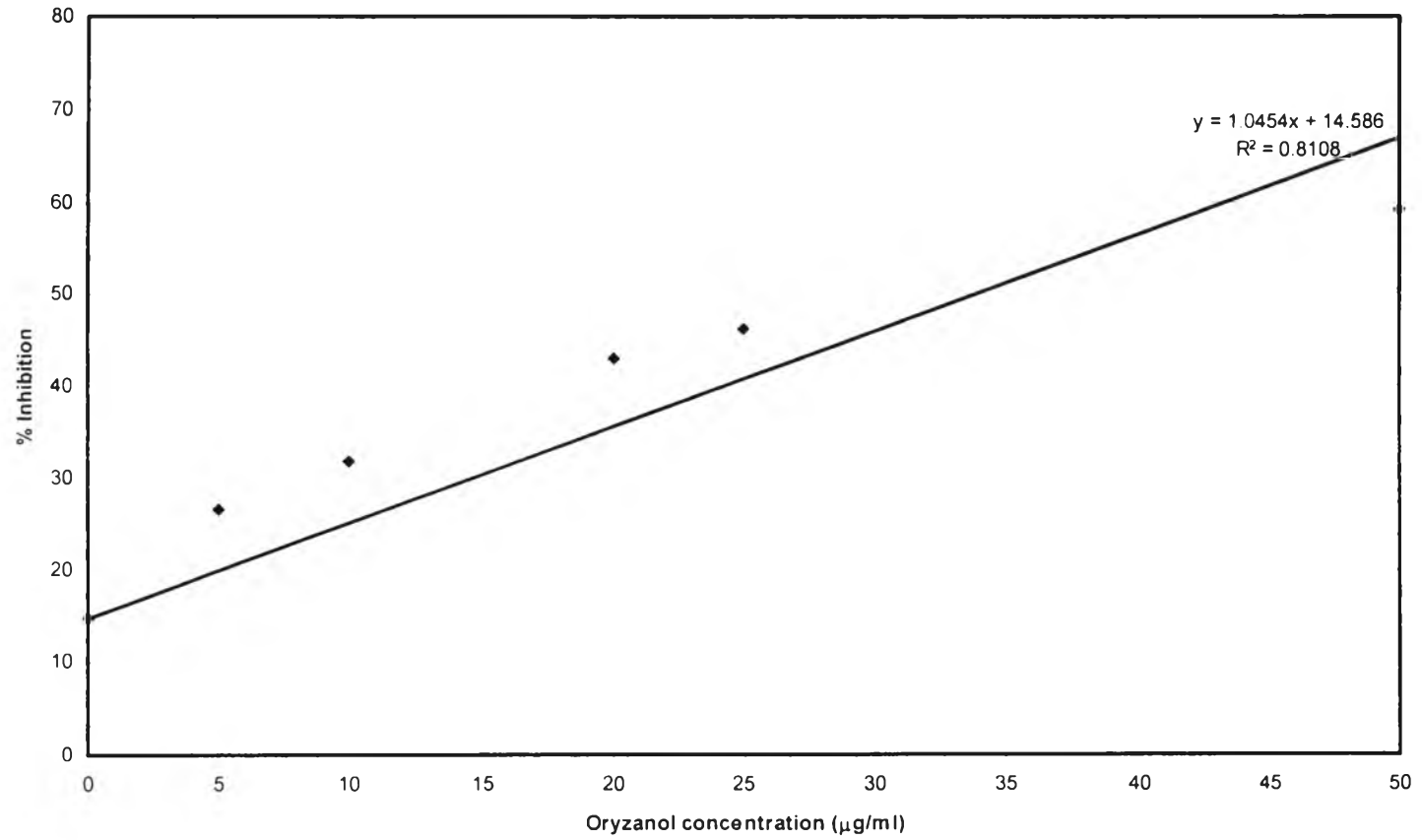


Figure 4 Antioxidant activity of Go Ko Chai Nat 1 extracts

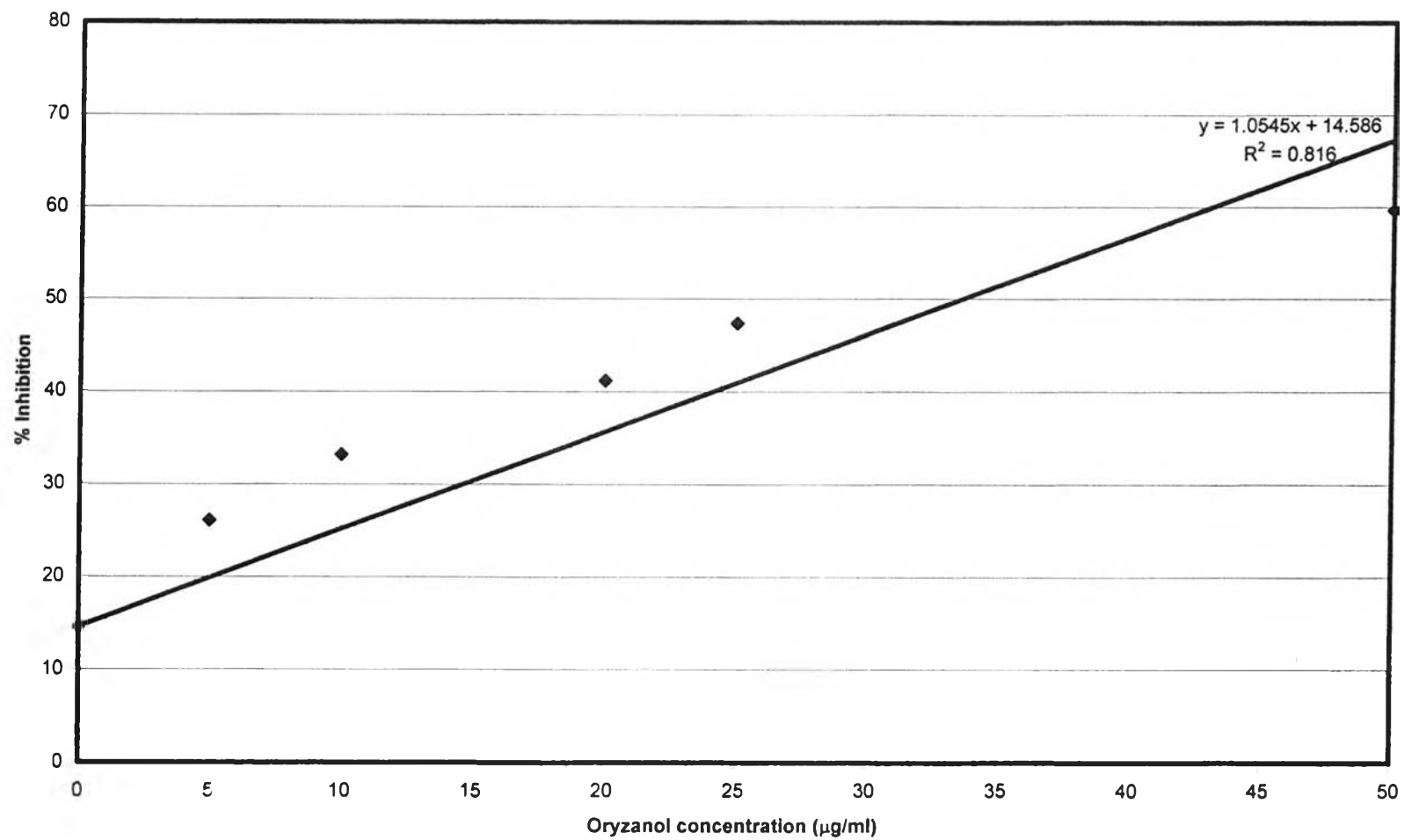


Figure 5 Antioxidant activity of standard oryzanol

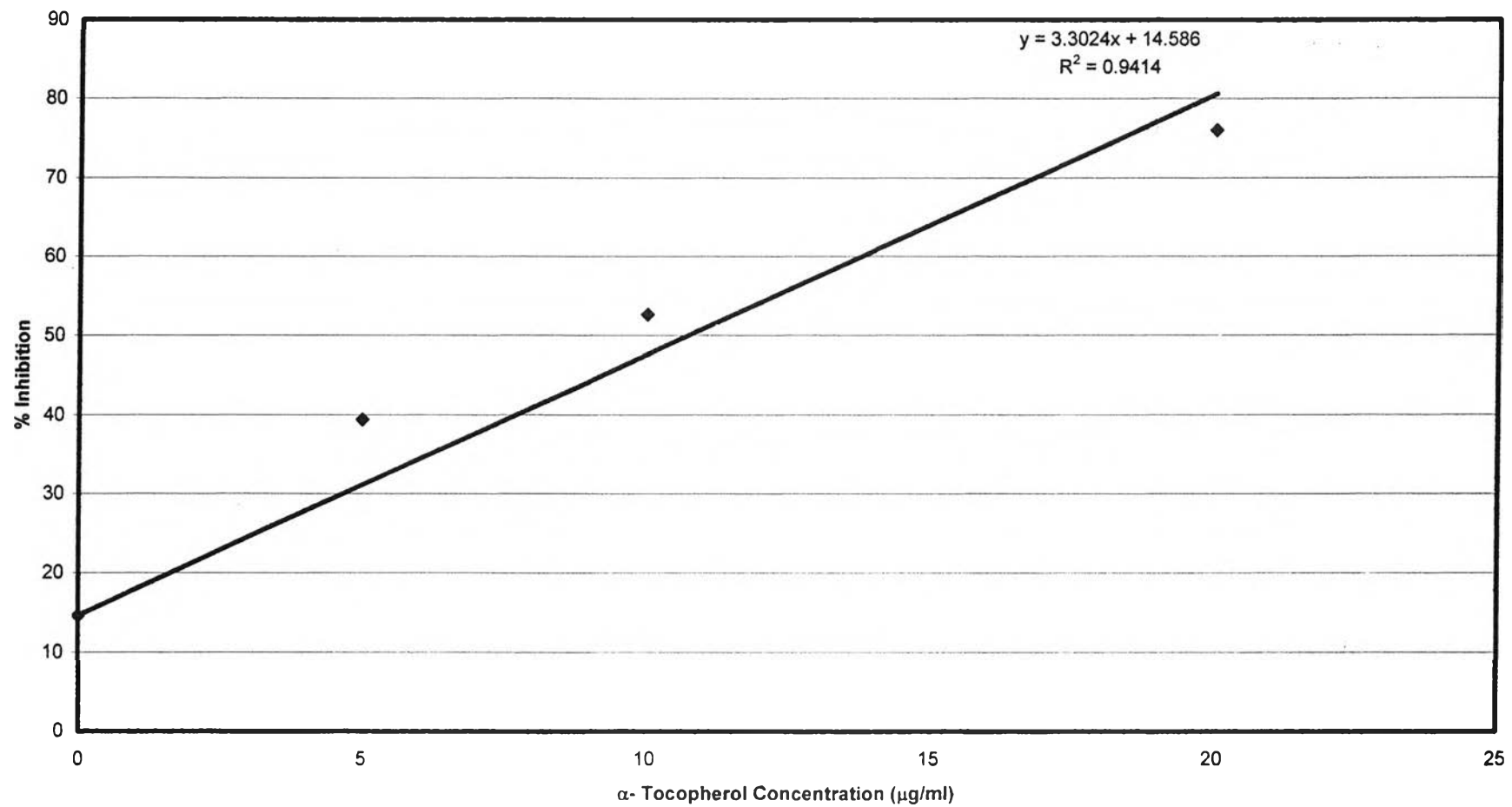


Figure 6 Antioxidant activity of α -tocopherol

BIOGRAPHY

Miss Lek Vejjanukroh was born on August 25, 1980, in Bangkok, Thailand. From Chulalongkorn University Demonstration School (Satit Chula), she has possessed the Certificate of High School since March 1998. She attended at the Department of Biochemistry, Faculty of Science, Chulalongkorn University and has graduated with Bachelor of Science Degree with Second Class Honors in Biochemistry since July, 2002. Since then, she had been studying for a Master Degree of Science in Biotechnology, Faculty of Science, Chulalongkorn University.

