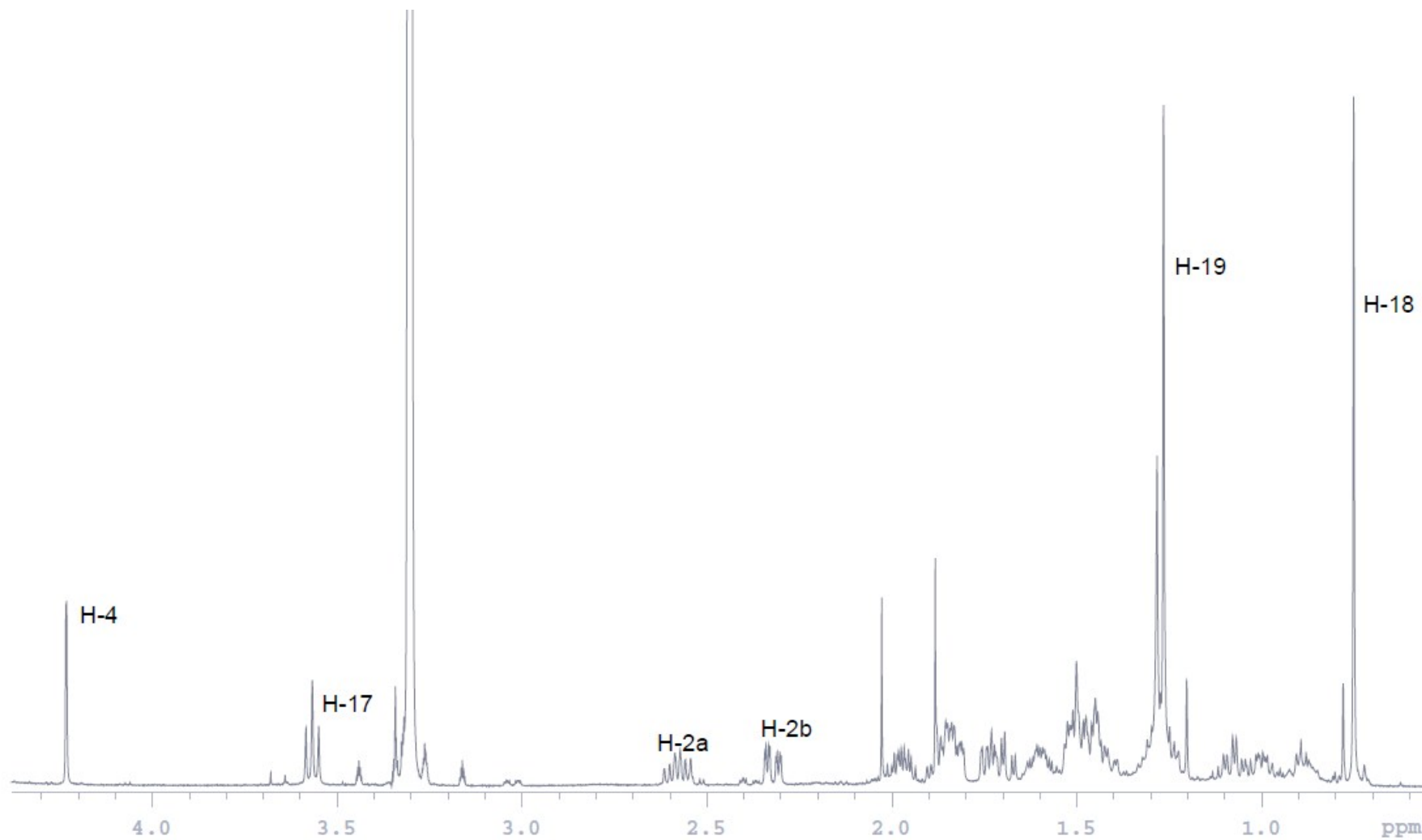


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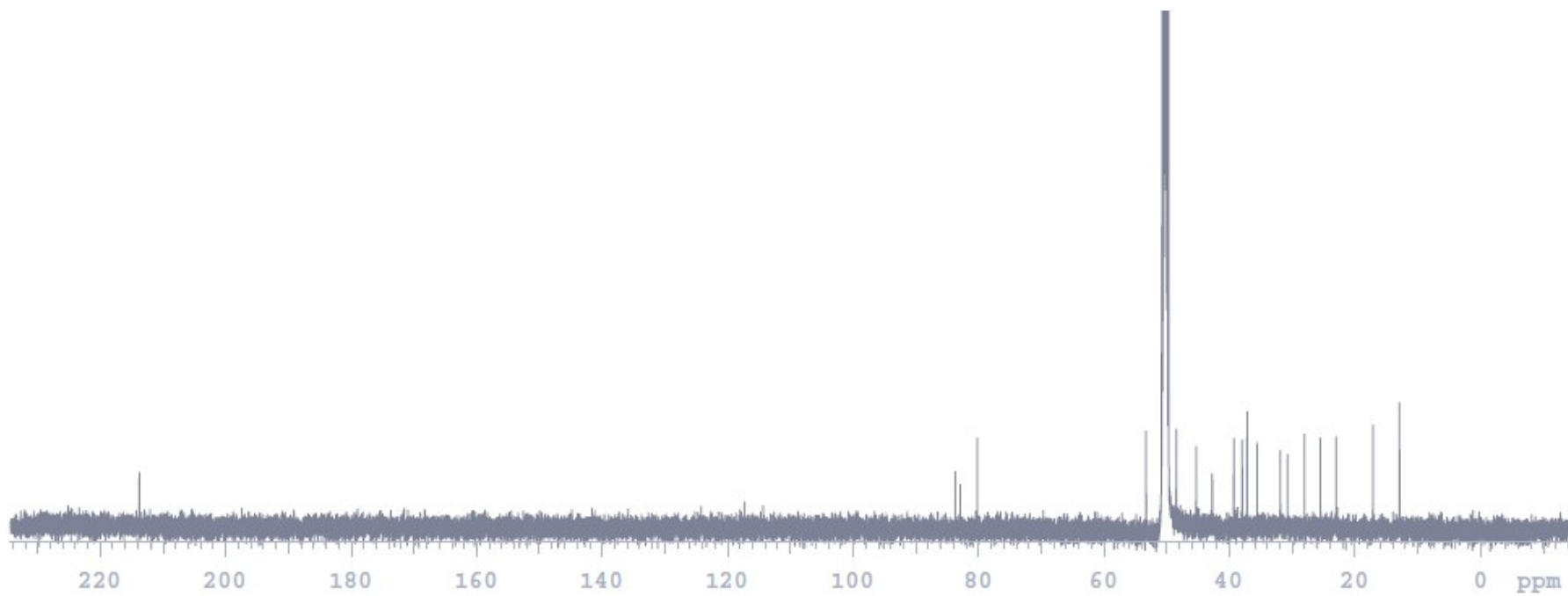
Oxidation of testosterone by permanganate and its implication in sports drug testing

Unnikrishnan Kuzhiumparambil, Shimpei Watanabe, Shanlin Fu

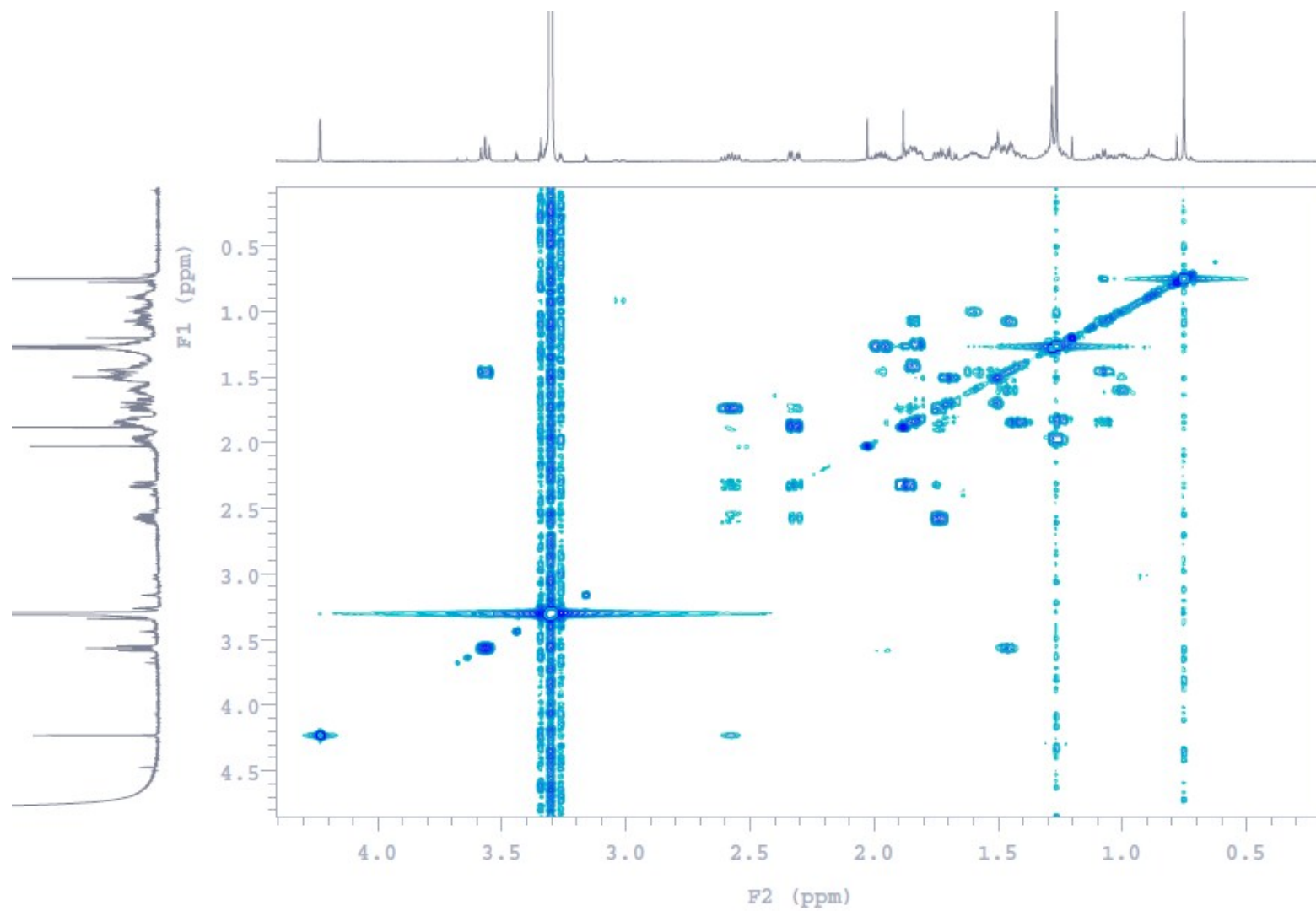
Centre for Forensic Science, School of Chemistry and Forensic Science, University of Technology, Sydney (UTS), Australia



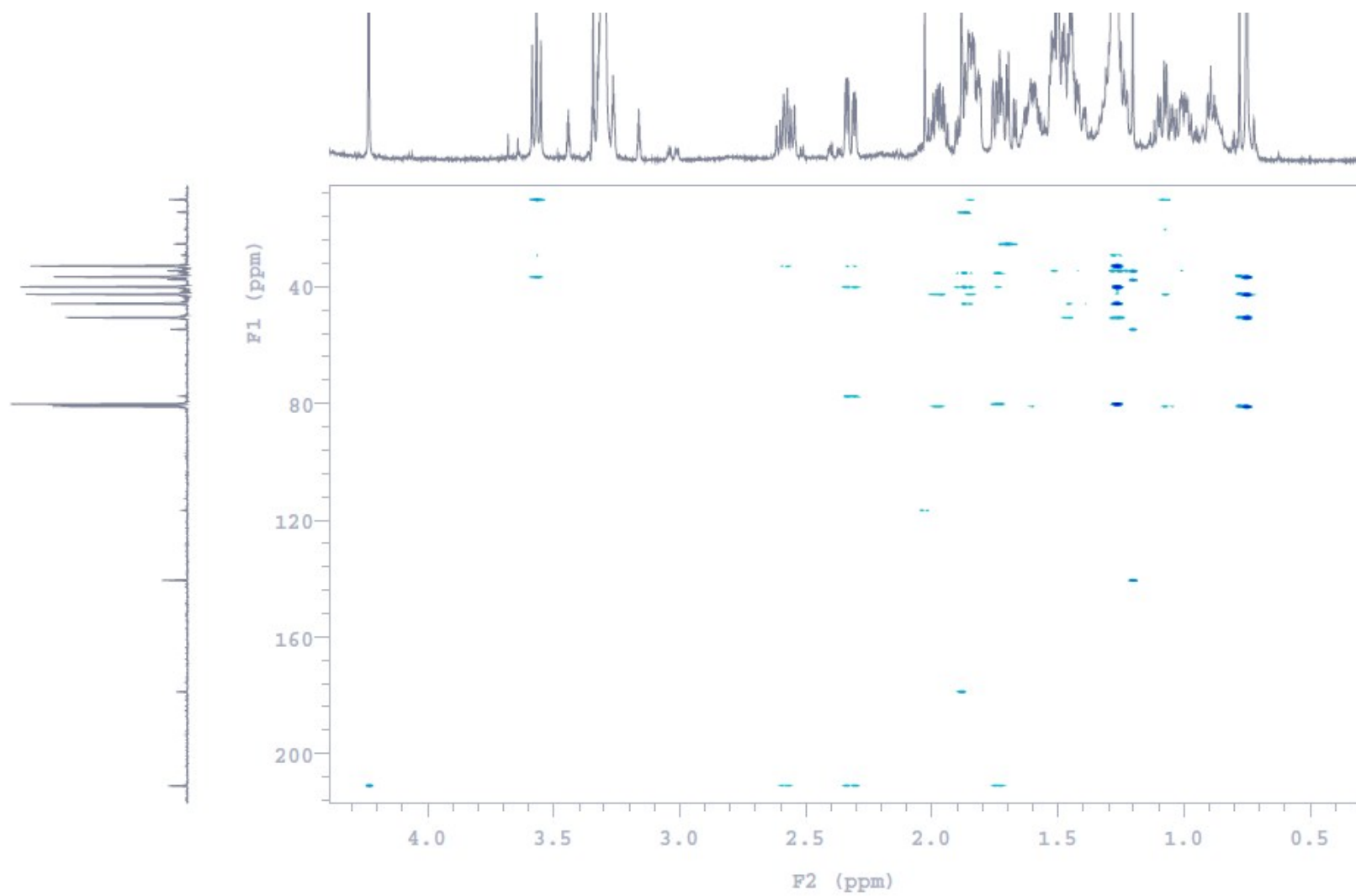
^1H NMR spectrum of $4\alpha,5\alpha$ -Dihydroxytestosterone (P1)



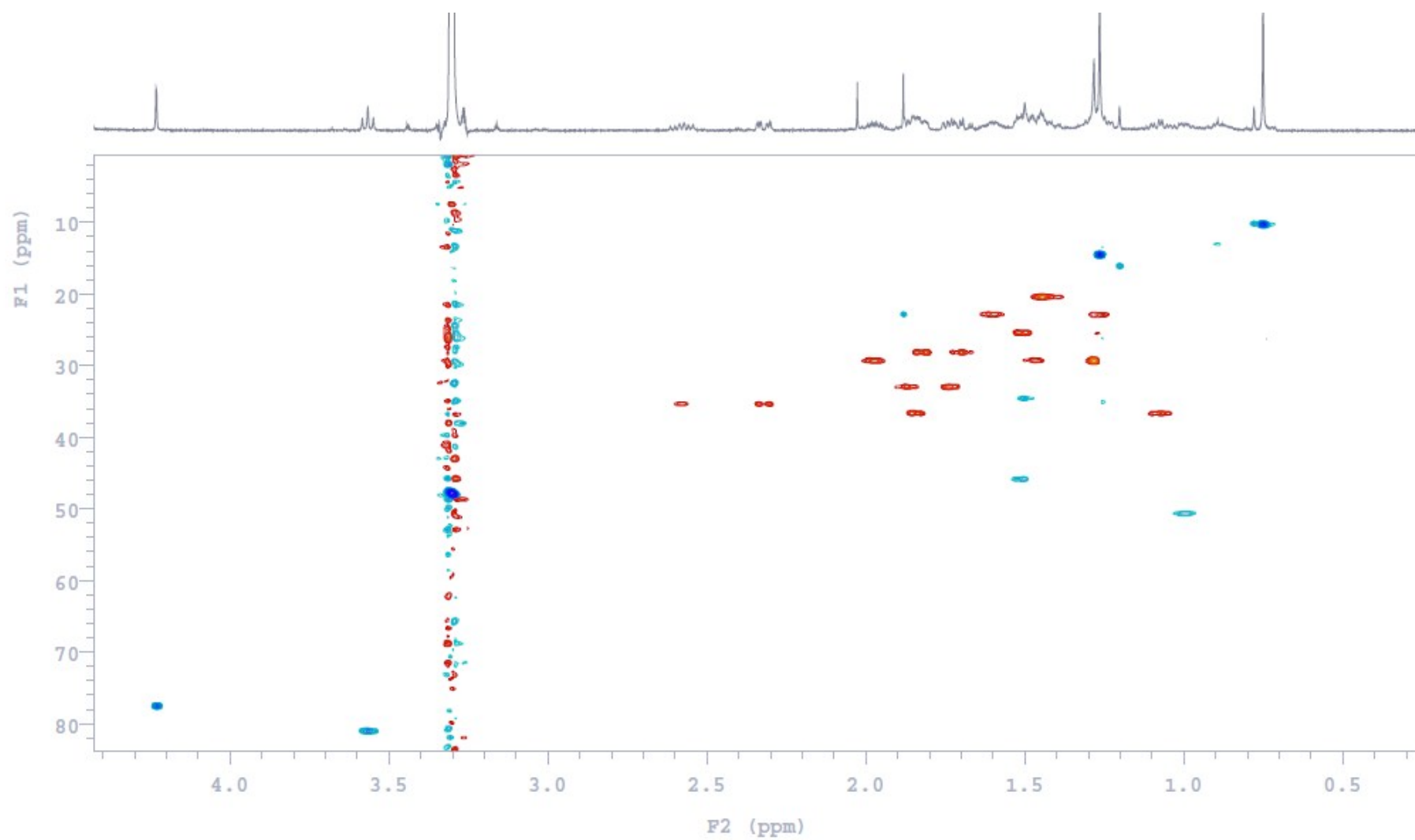
^{13}C NMR spectrum of 4 α ,5 α -Dihydroxytestosterone (P1)



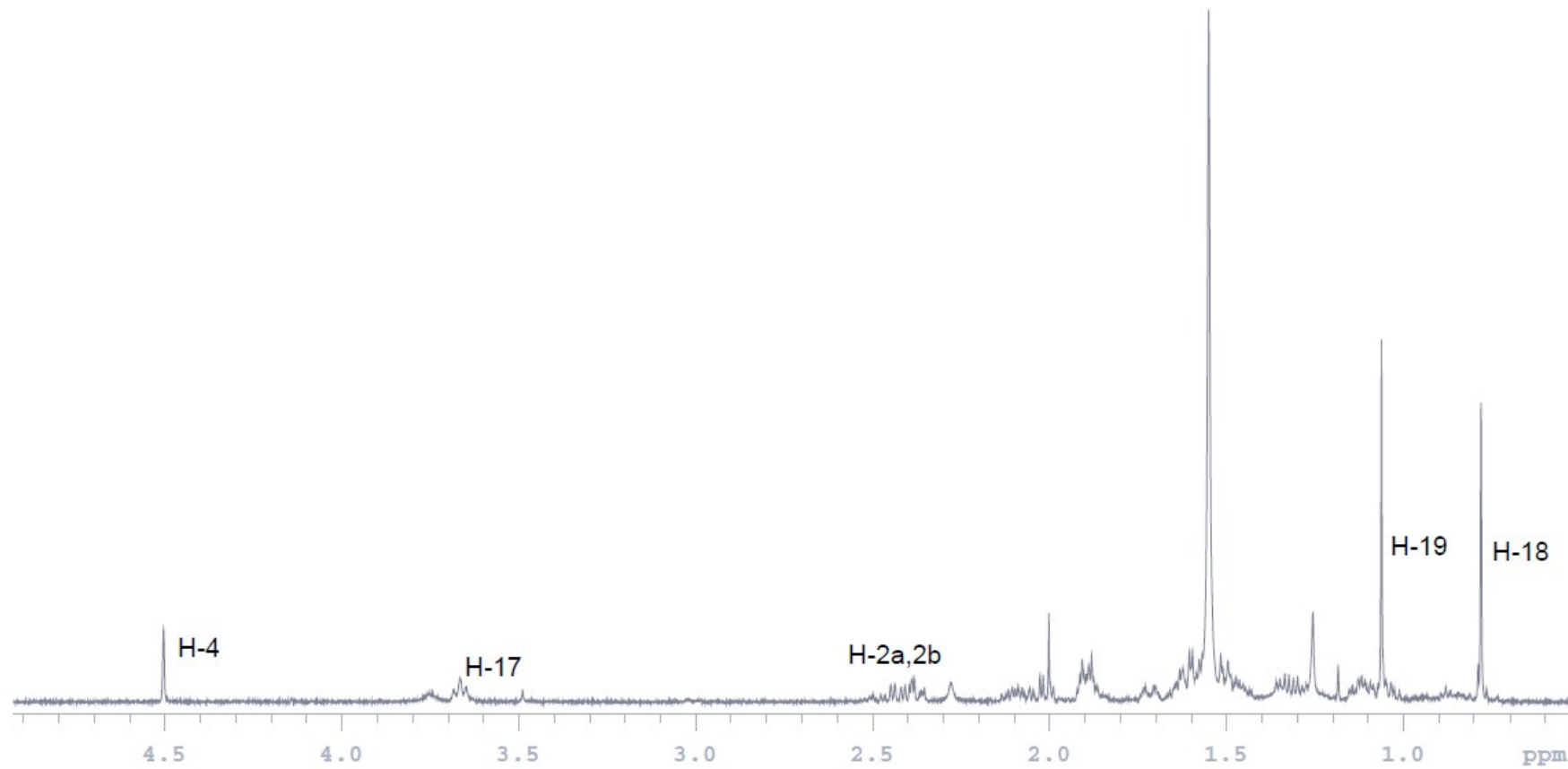
COSY spectrum of 4 α ,5 α -Dihydroxytestosterone (P1)



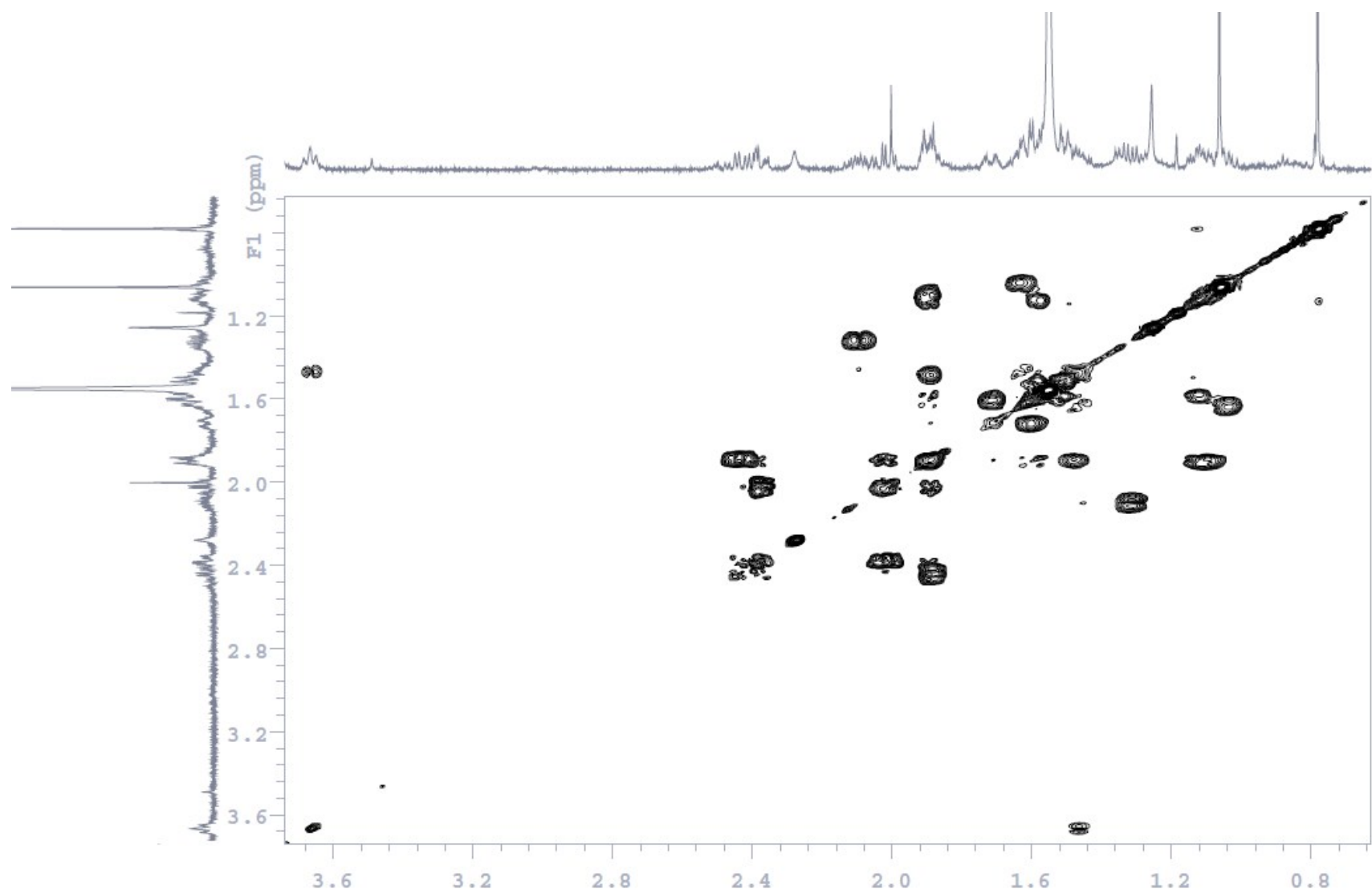
HMBC spectrum of 4 α ,5 α -Dihydroxytestosterone (P1)



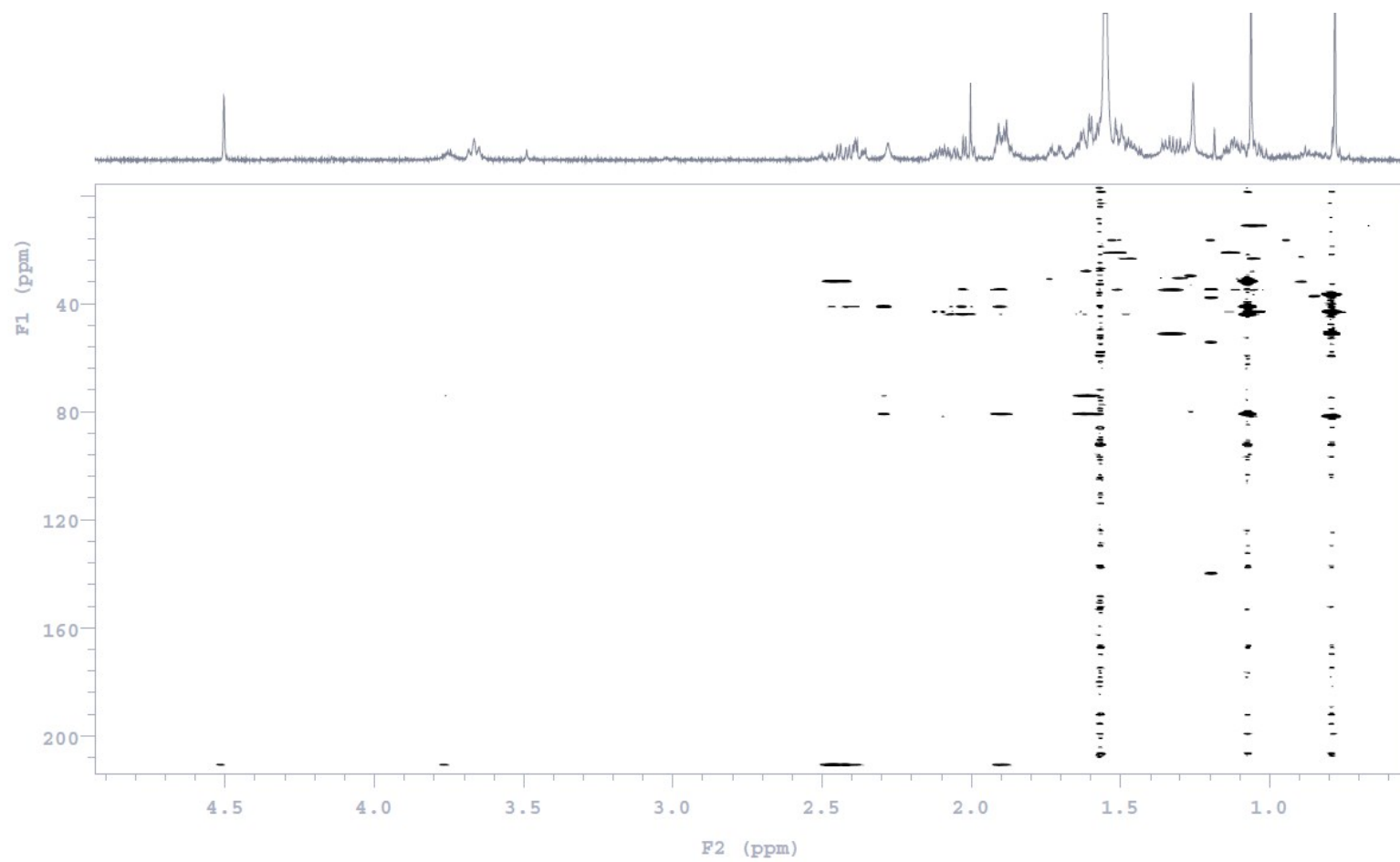
HSQC spectrum of $4\alpha,5\alpha$ -Dihydroxytestosterone (P1)



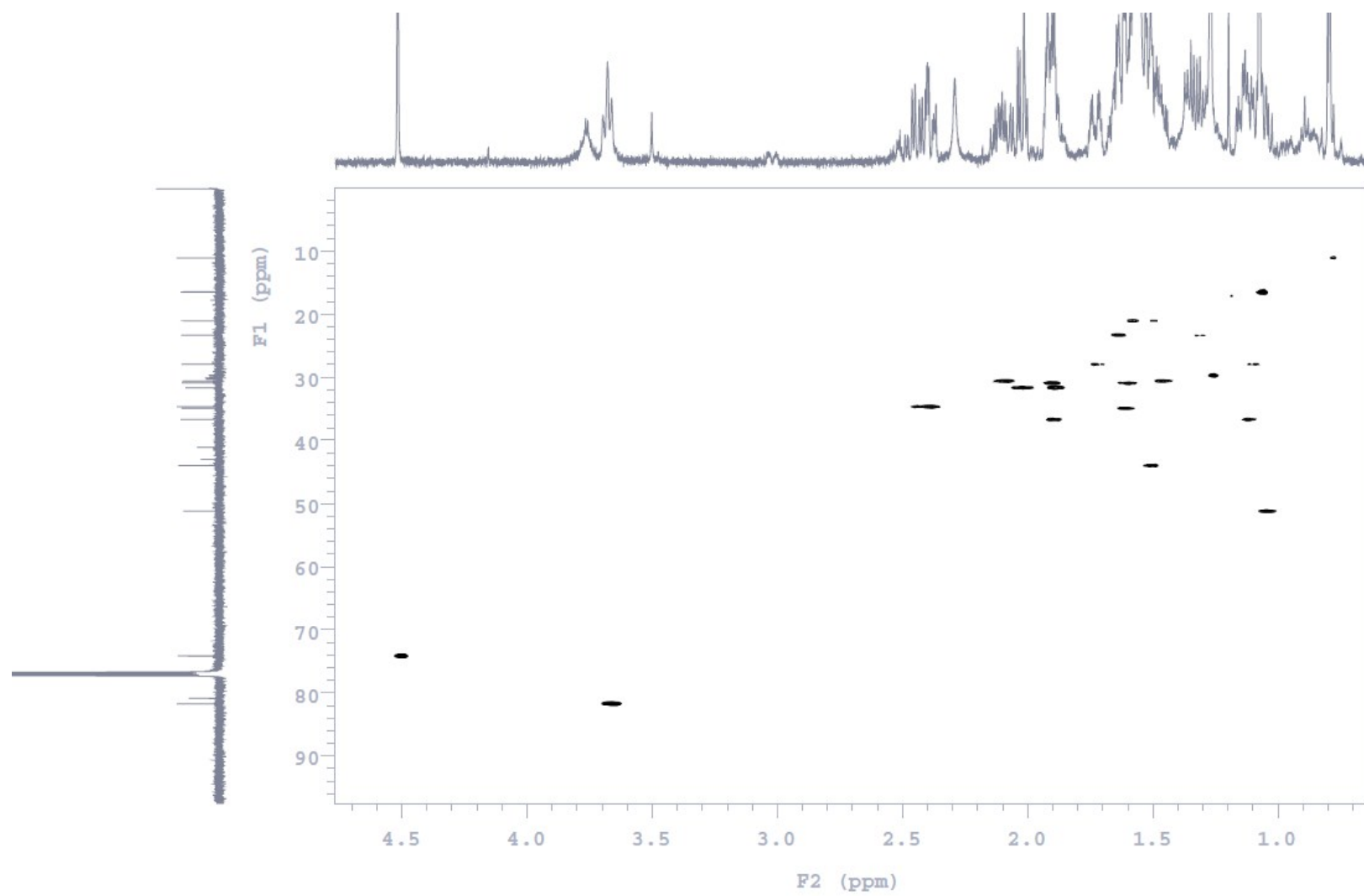
^1H NMR spectrum of $4\beta,5\beta$ -Dihydroxytestosterone (P2)



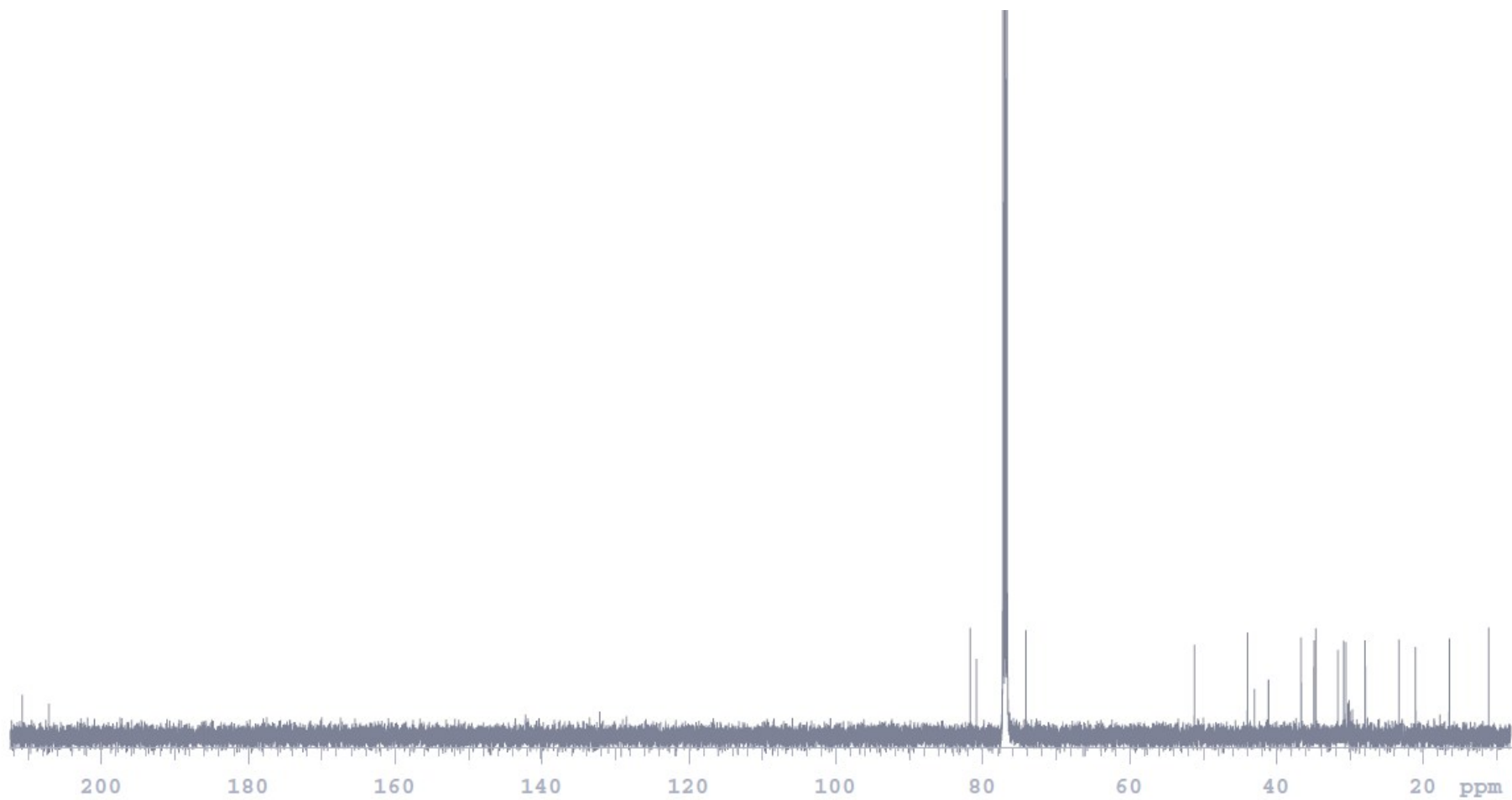
COSY spectrum of 4β,5β-Dihydroxytestosterone (P2)



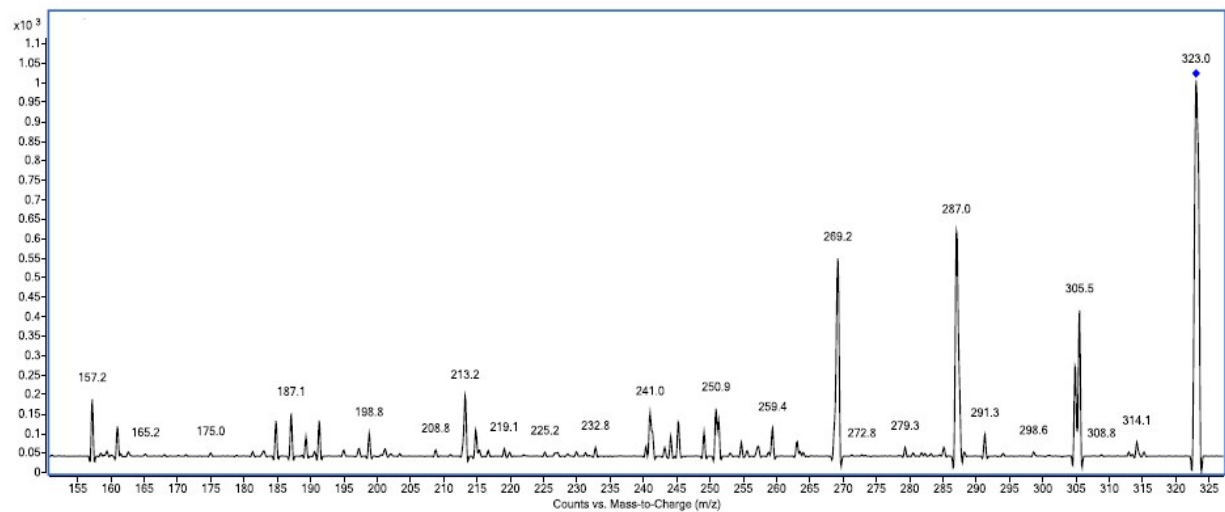
HMBC spectrum of 4β,5β-Dihydroxytestosterone (P2)



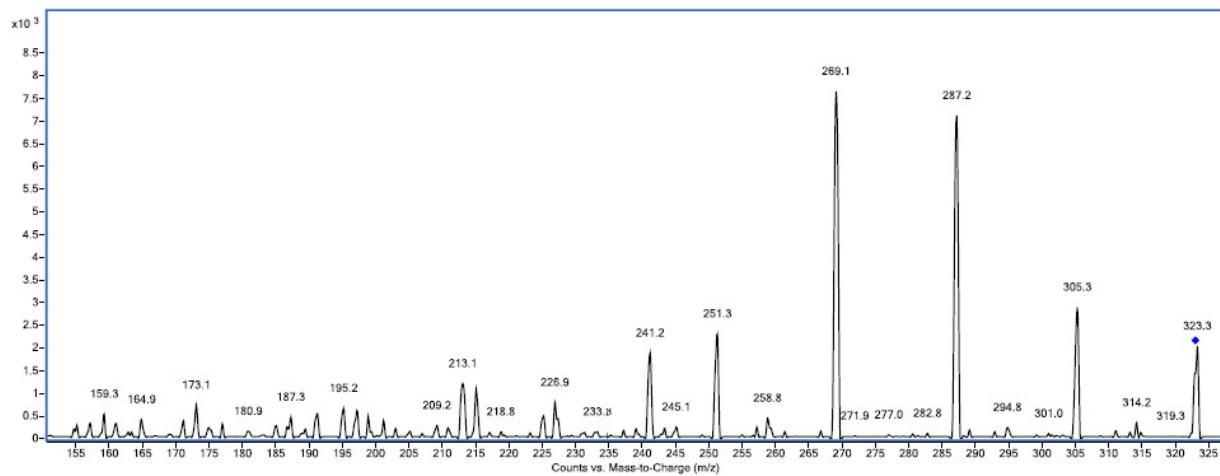
HSQC NMR spectrum of 4β,5β-Dihydroxytestosterone (P2)



^{13}C NMR spectrum of $4\beta,5\beta$ -Dihydroxytestosterone (P2)



Product ion spectrum of 4 α ,5 α -Dihydroxytestosterone (P1)



Product ion spectrum of 4 β ,5 β -Dihydroxytestosterone (P2)