

<u>Glycerol Backbone</u> $ \begin{array}{c} \text{sn-1} \quad \text{CH}_2\text{-R1} \\ \\ \text{sn-2} \quad \text{CH-R2} \\ \\ \text{sn-3} \quad \text{CH}_2\text{-R3} \end{array} $	<u>sn-2/R2</u> <u>PtdEt/Plasmany/Plasmenyl</u> O-C(O)-C17H35 (18:0) O-C(O)-C17H33 (18:1) O-C(O)-C17H31 (18:2) O-C(O)-C19H31 (20:4) O-C(O)-C21H35 (22:4) O-C(O)-C21H31 (22:6)
<u>sn-1/R1</u> <u>PtdEt</u> O-C(O)-C15H31 (16:0) O-C(O)-C17H35 (18:0) <u>Plasmany</u> O-CH₂-CH₂-C14H29 (16:0) O-CH₂-CH₂-C16H33 (18:0) <u>Plasmenyl</u> O-CH=CH-C14H29 (16:0) O-CH=CH-C16H33 (18:0)	<u>sn-3/R3</u> <u>PtdEt/Plasmany/Plasmenyl</u> O-P(O)-O-C2H4-NH2 OH <u>Example</u> CH₂-O-CH=CH-C16H33 CH-O-C(O)-C21H31 CH₂-O-P(O)-O-C2H4-NH2 OH [Plasmenyl (18:0/22:6)]

FIGURE 1

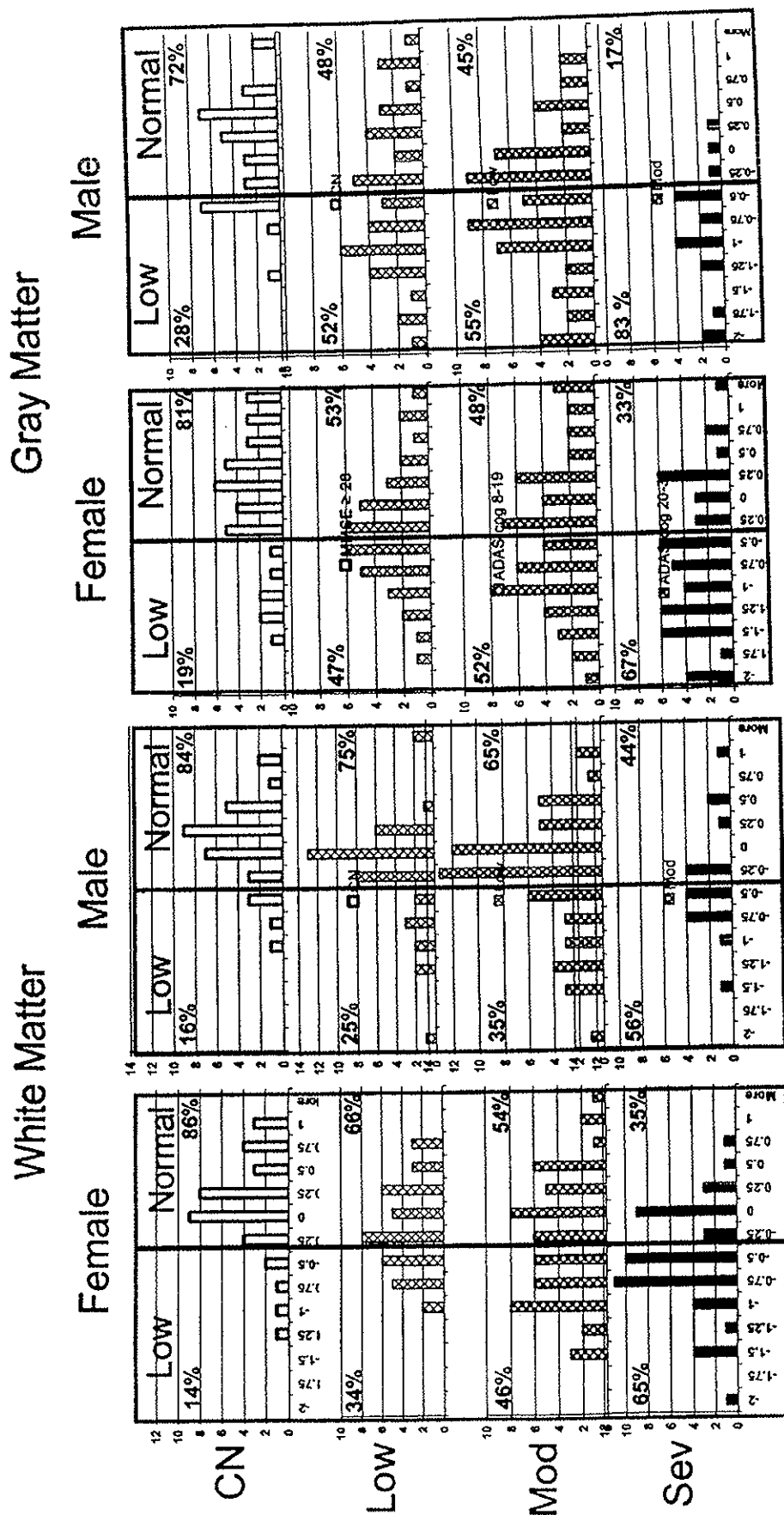


FIGURE 2

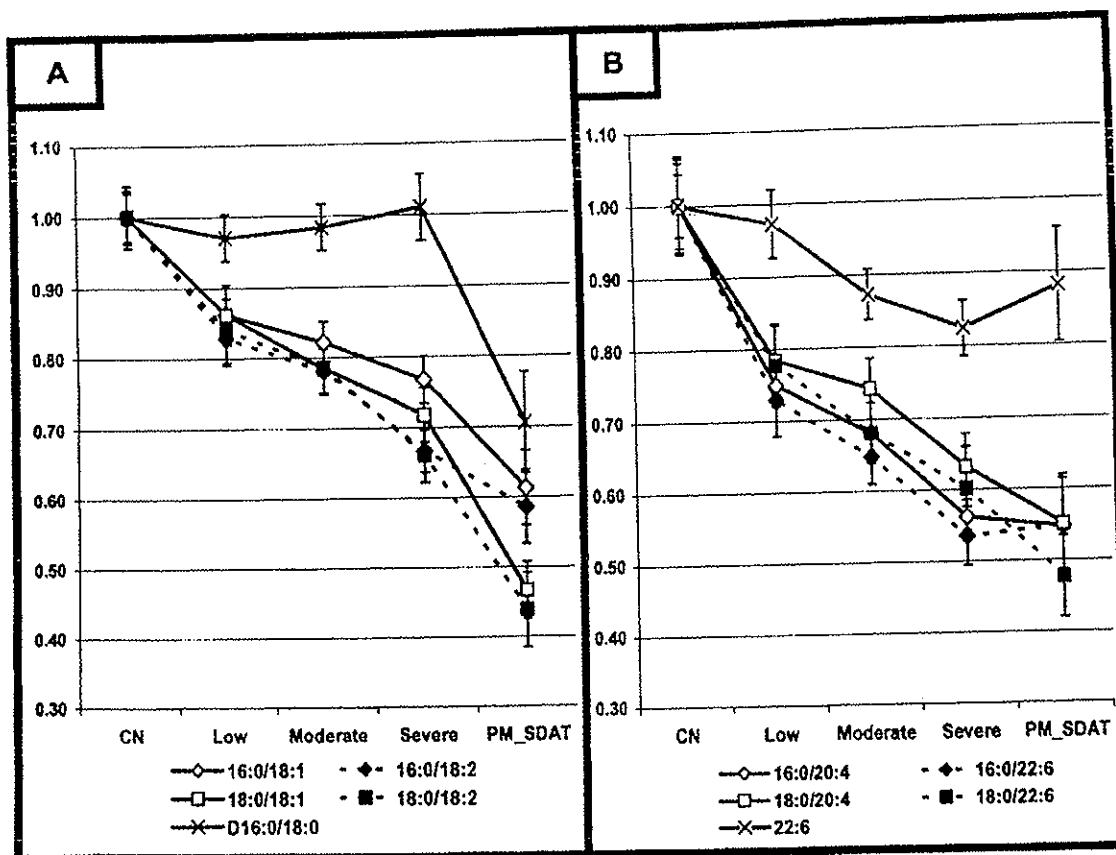


FIGURE 3

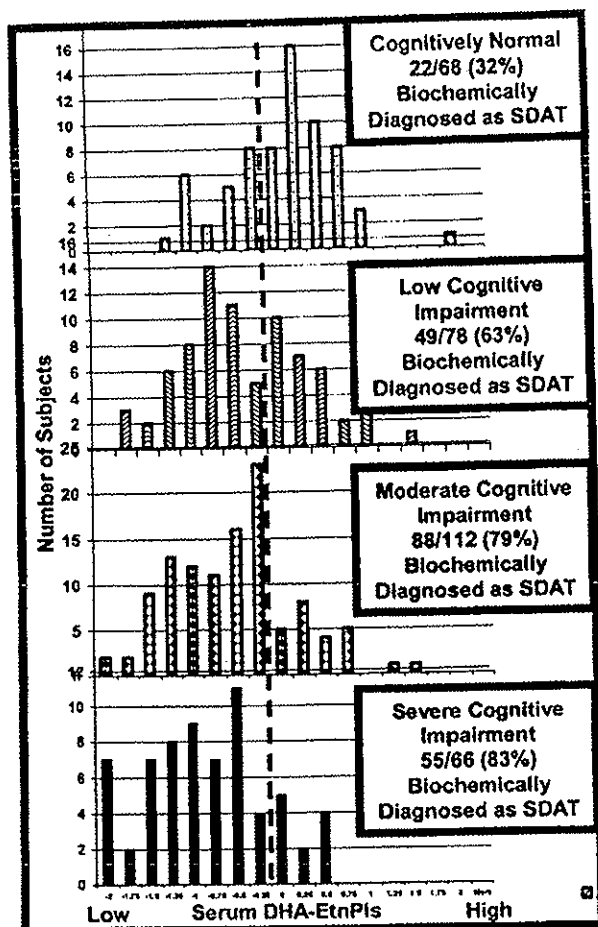


FIGURE 4

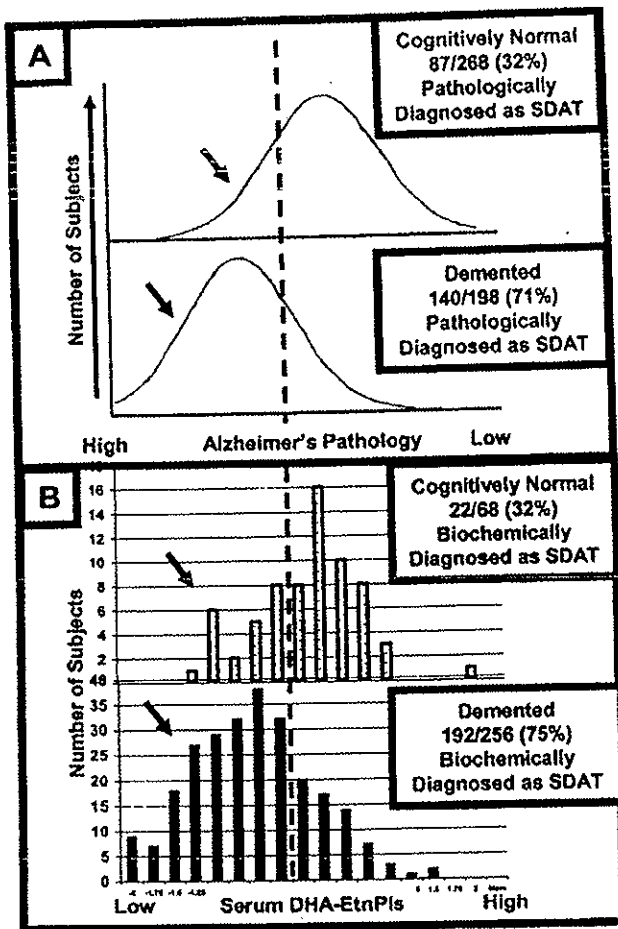


FIGURE 5

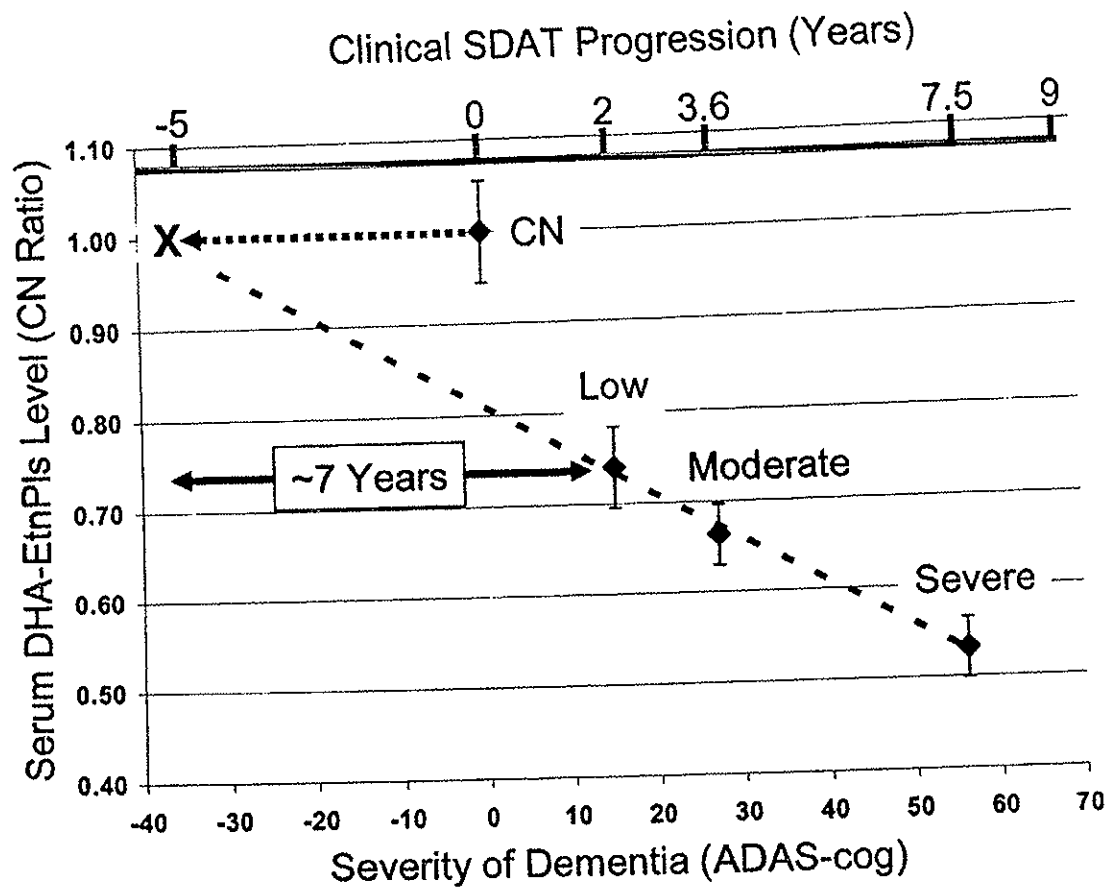


FIGURE 6

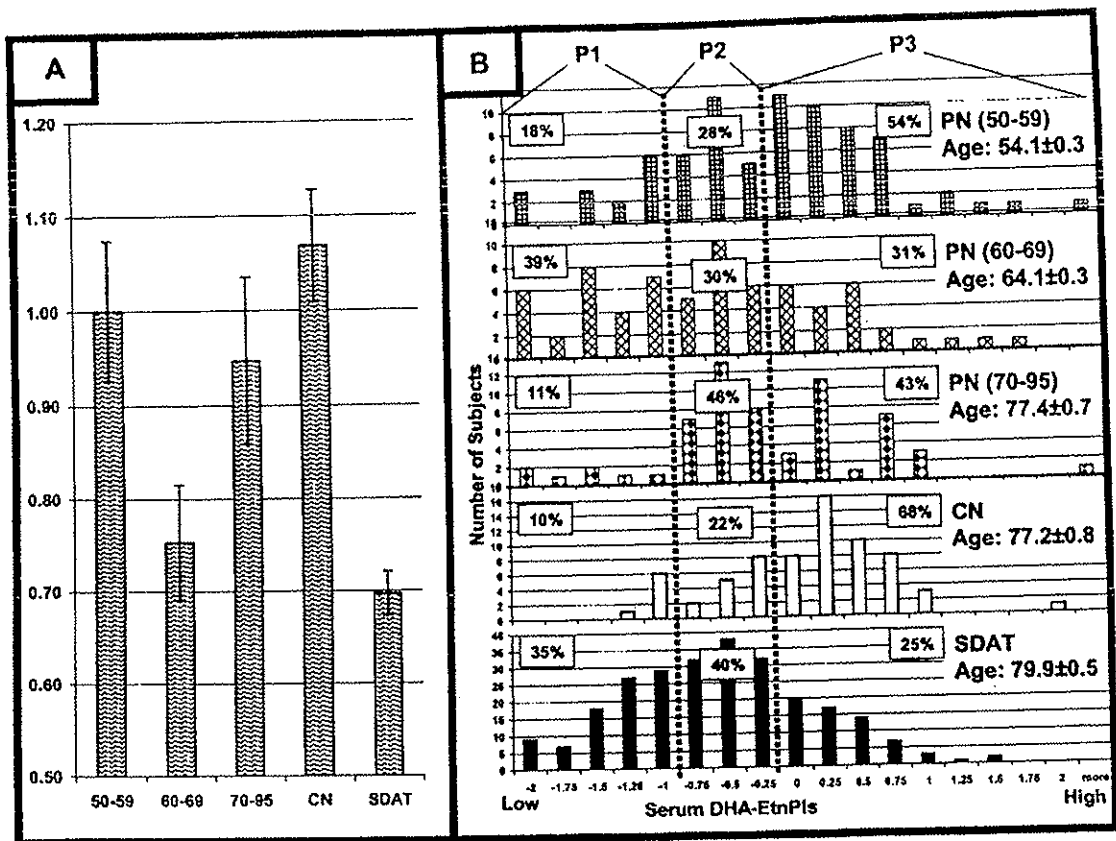


FIGURE 7

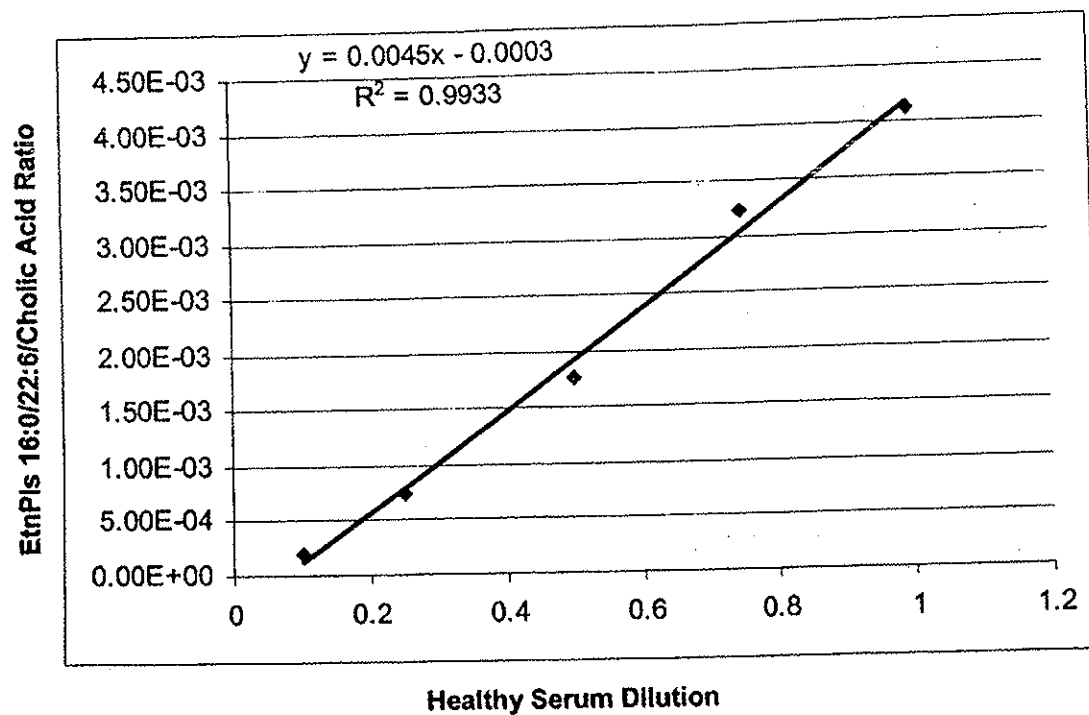


FIGURE 8

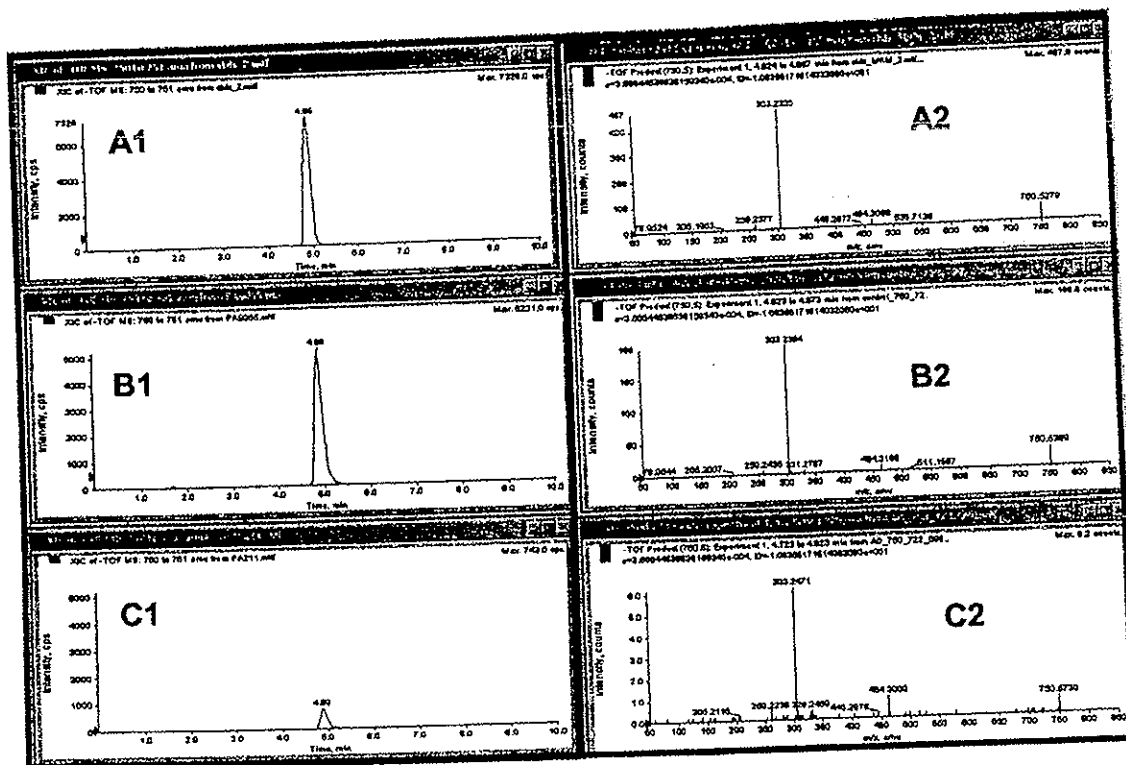


FIGURE 9

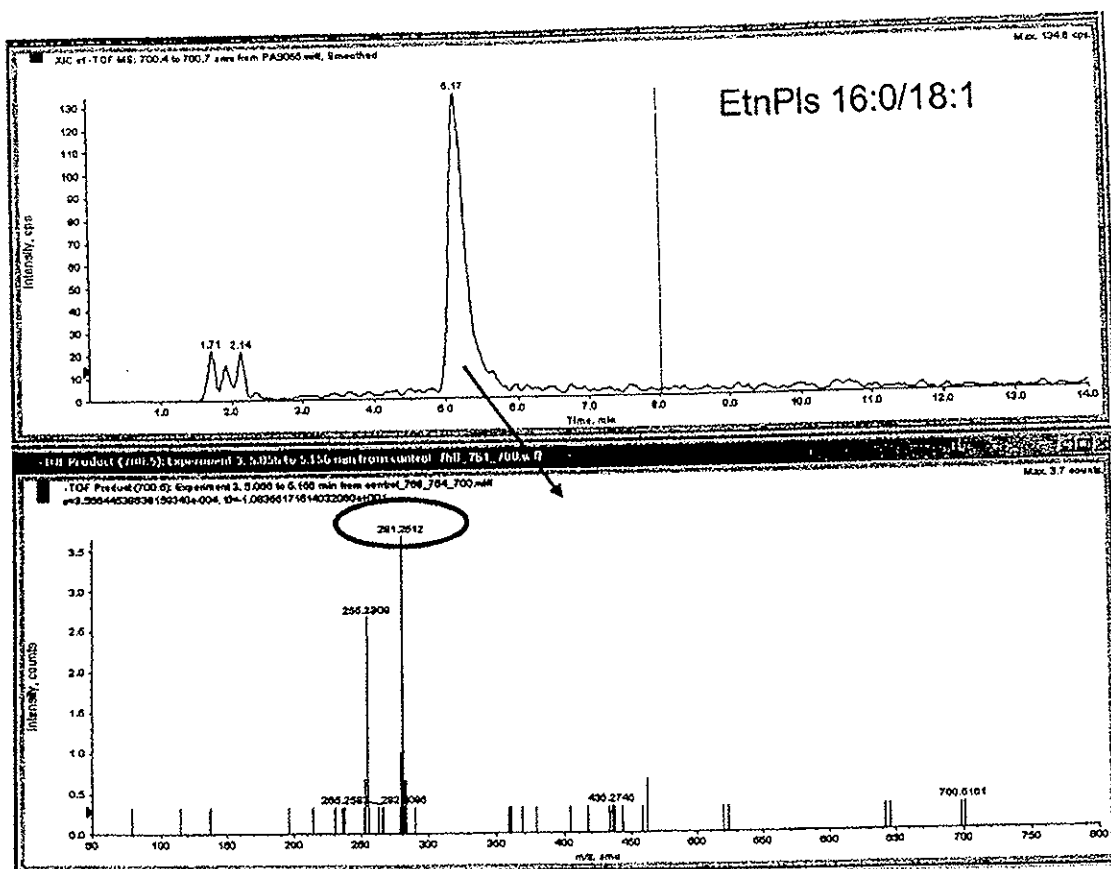


FIGURE 10

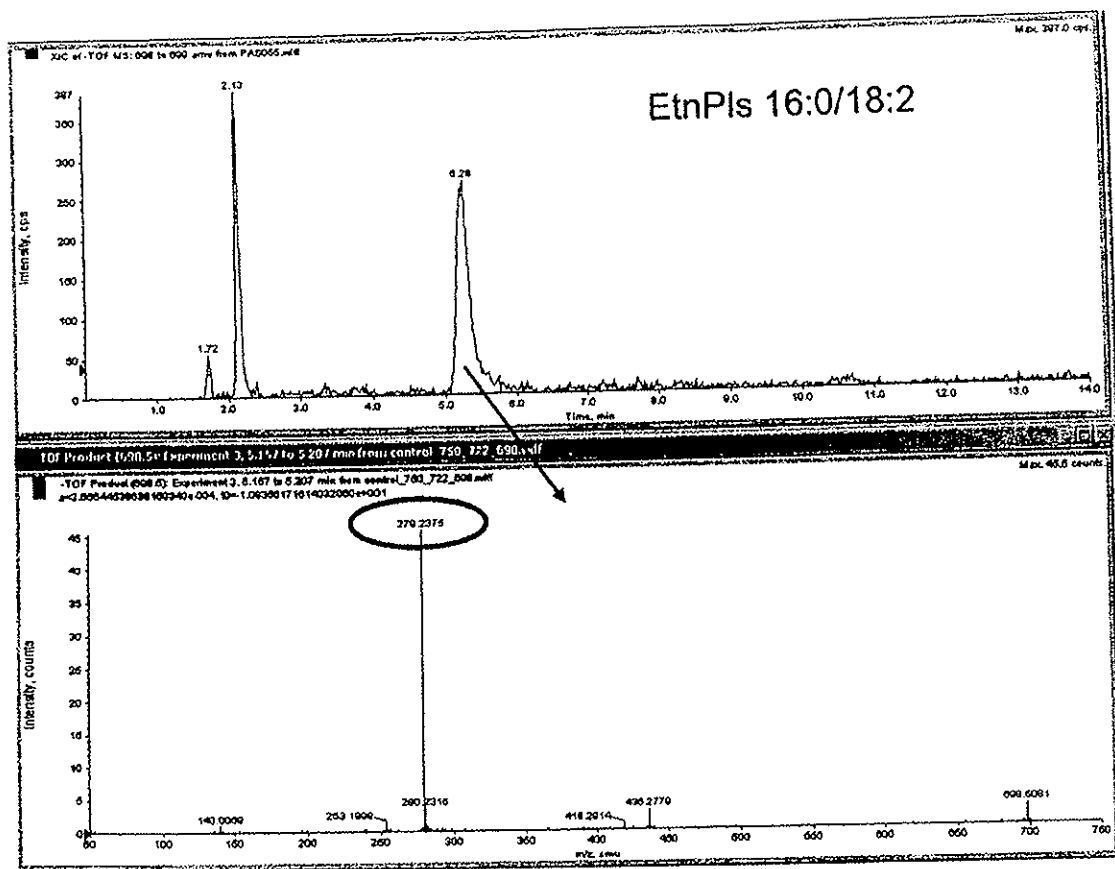


FIGURE 11

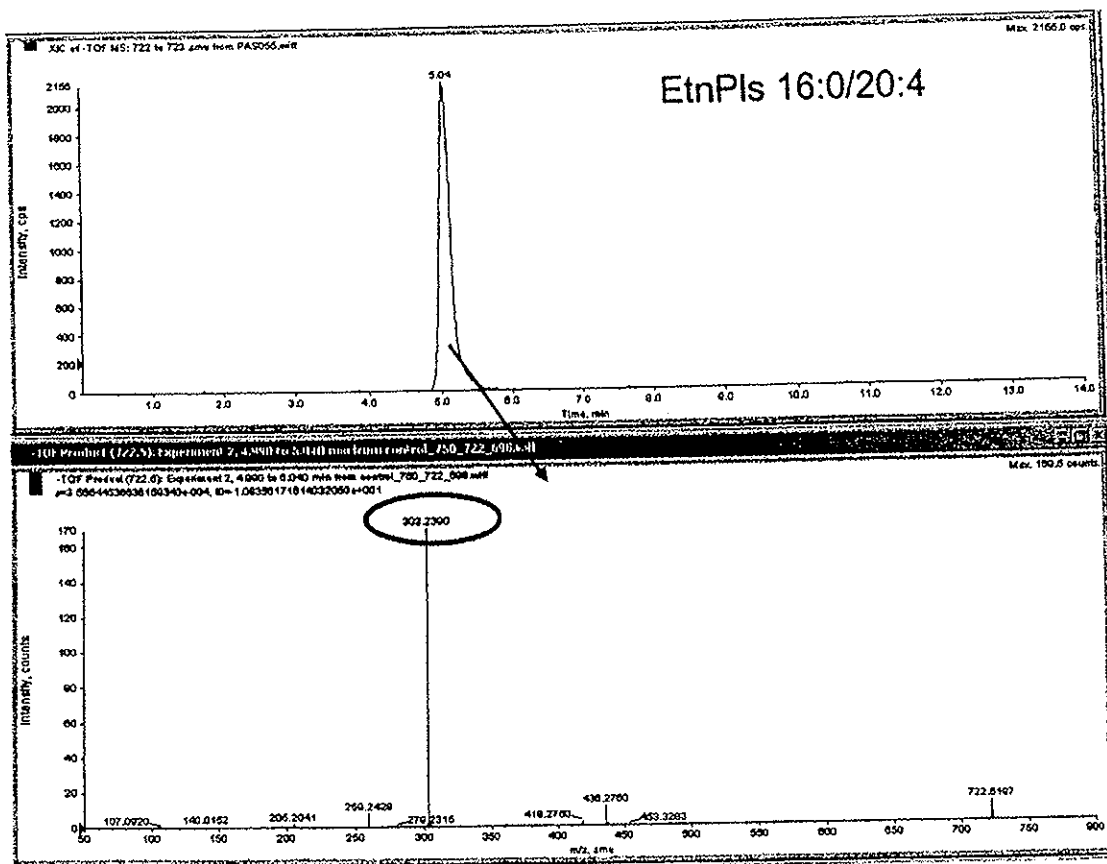


FIGURE 12

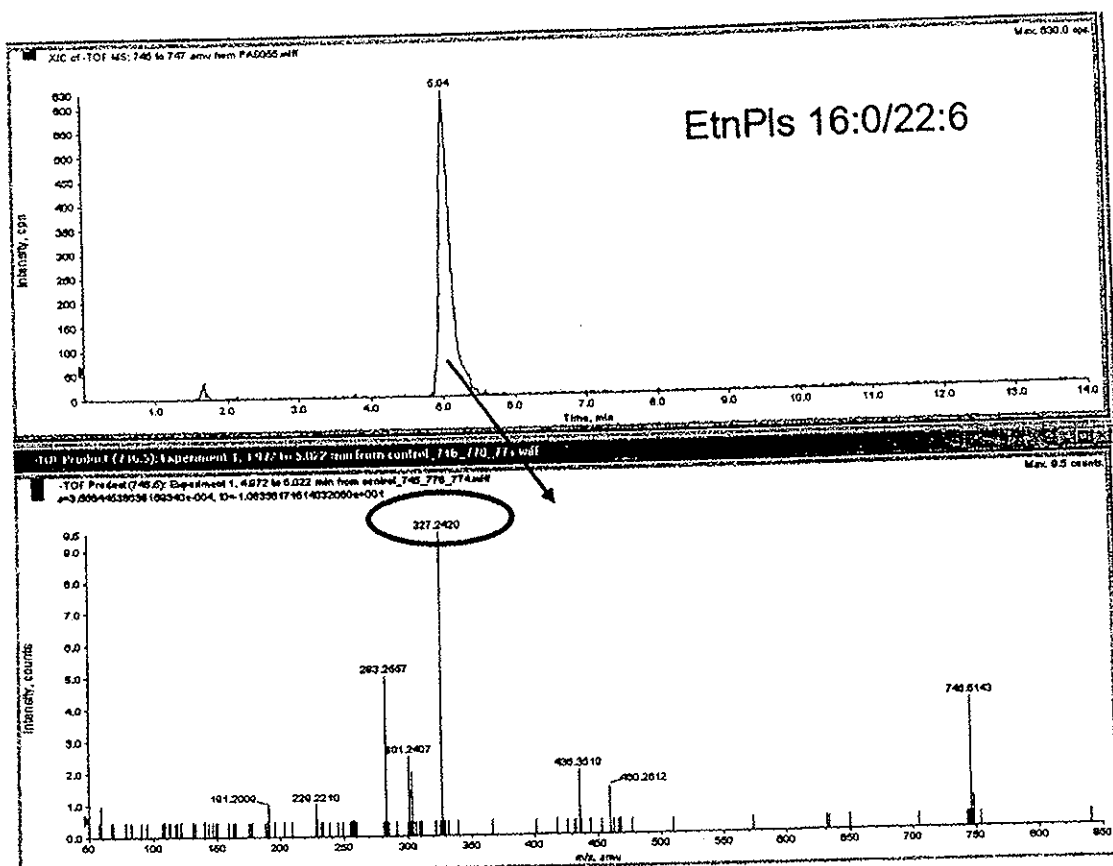


FIGURE 13

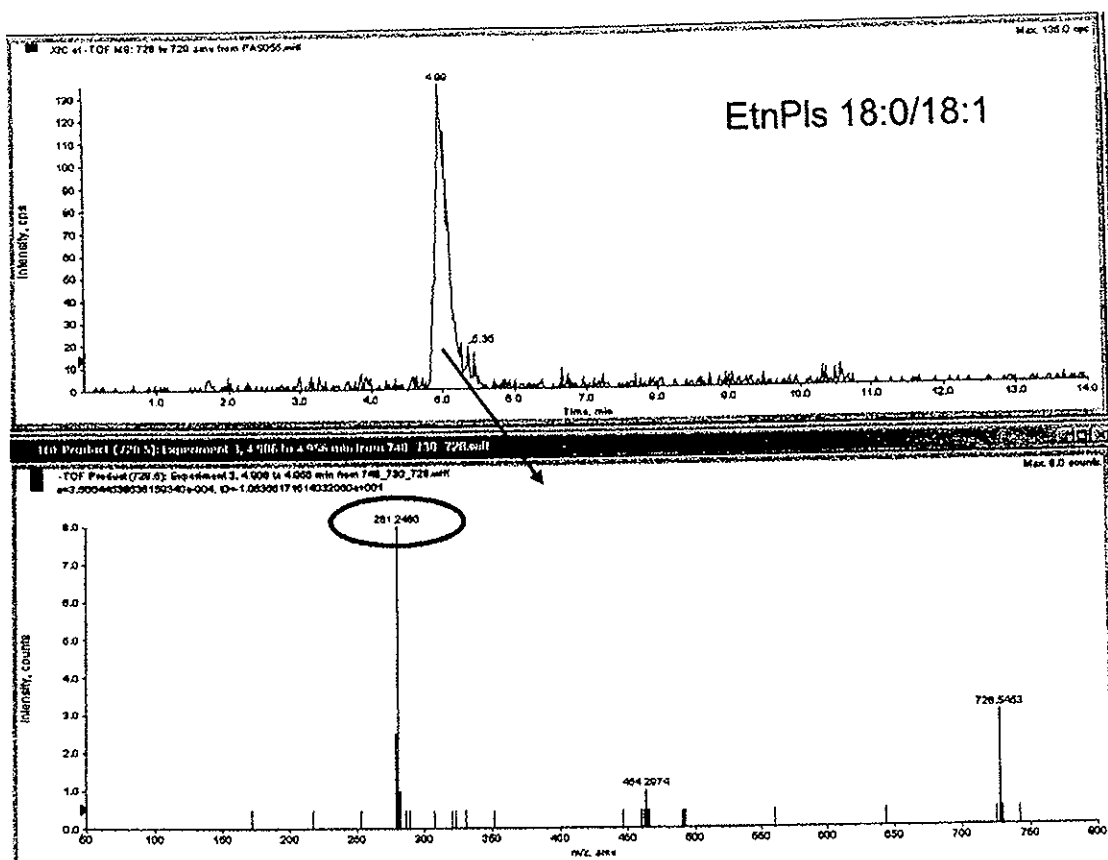


FIGURE 14

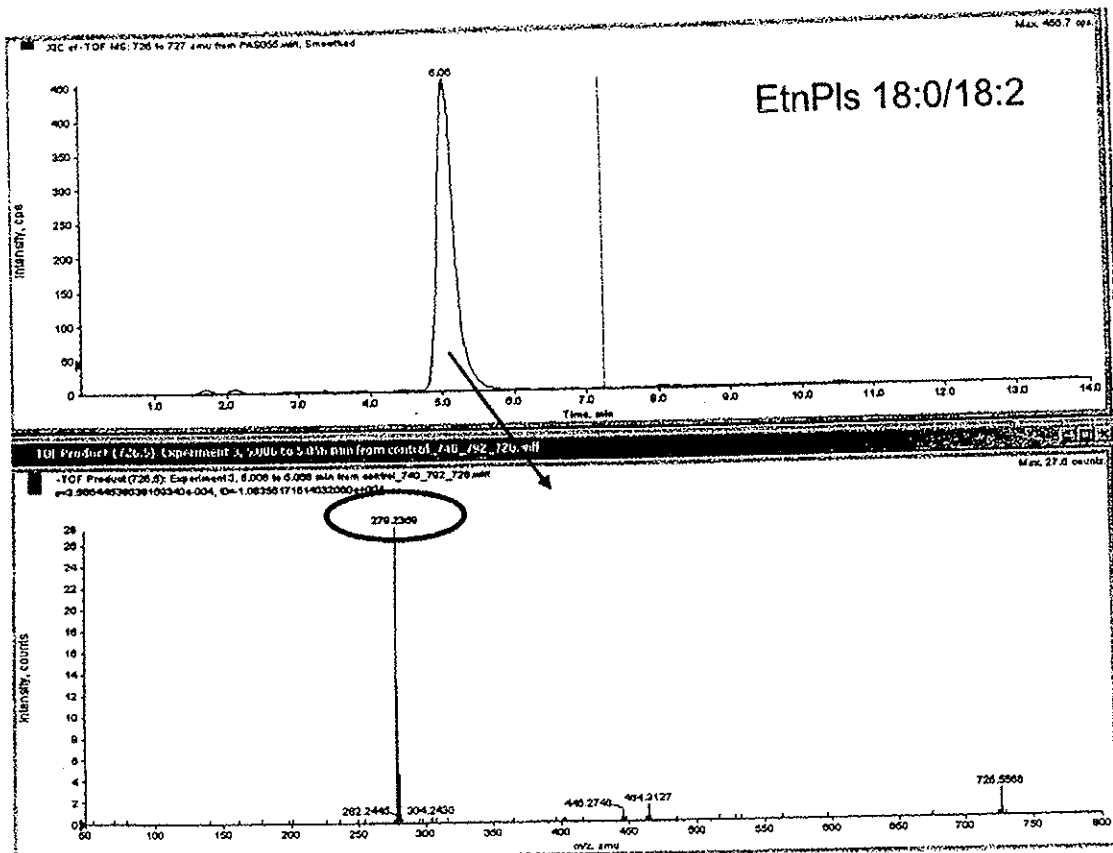


FIGURE 15

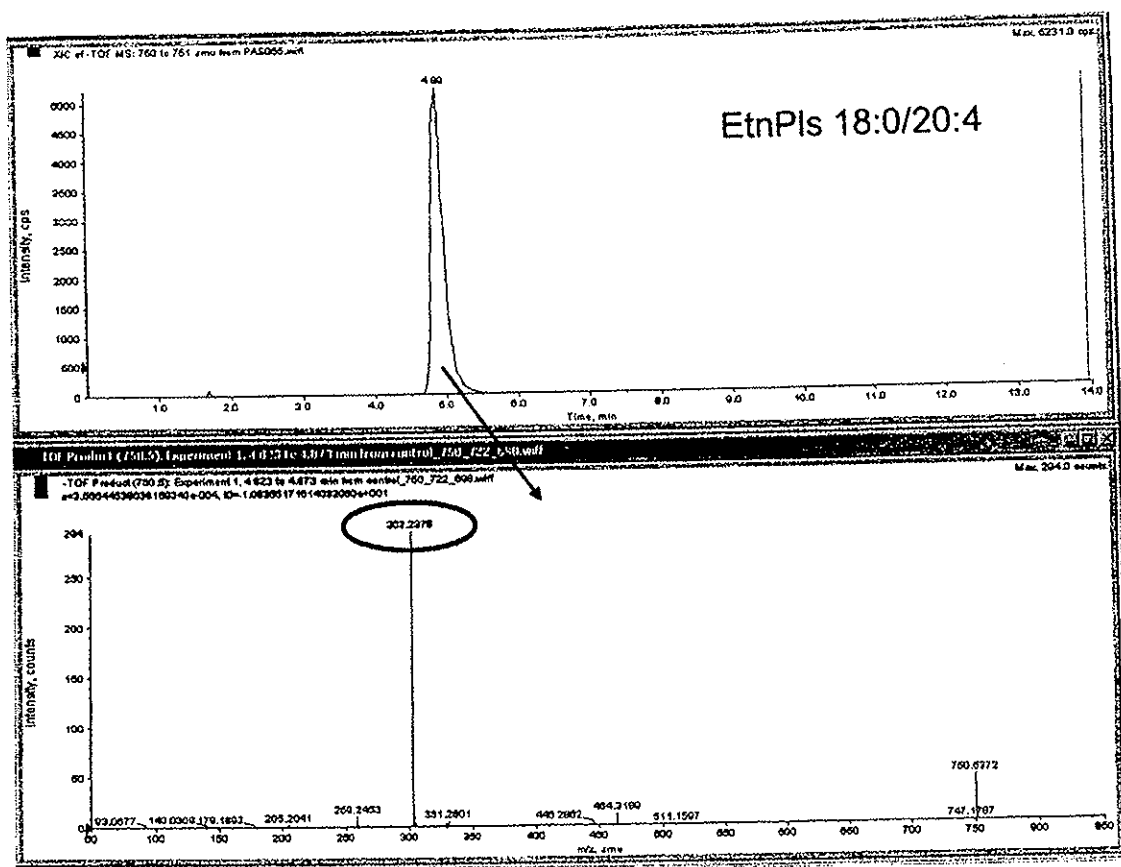


FIGURE 16

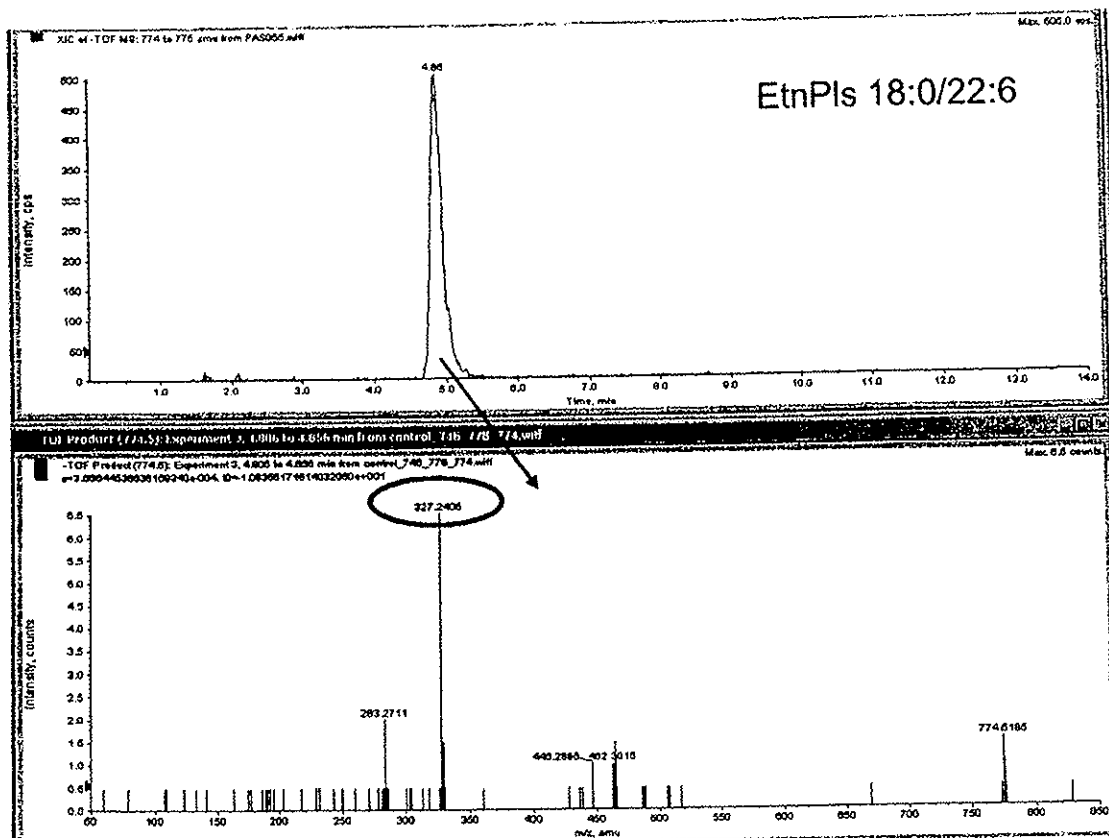


FIGURE 17

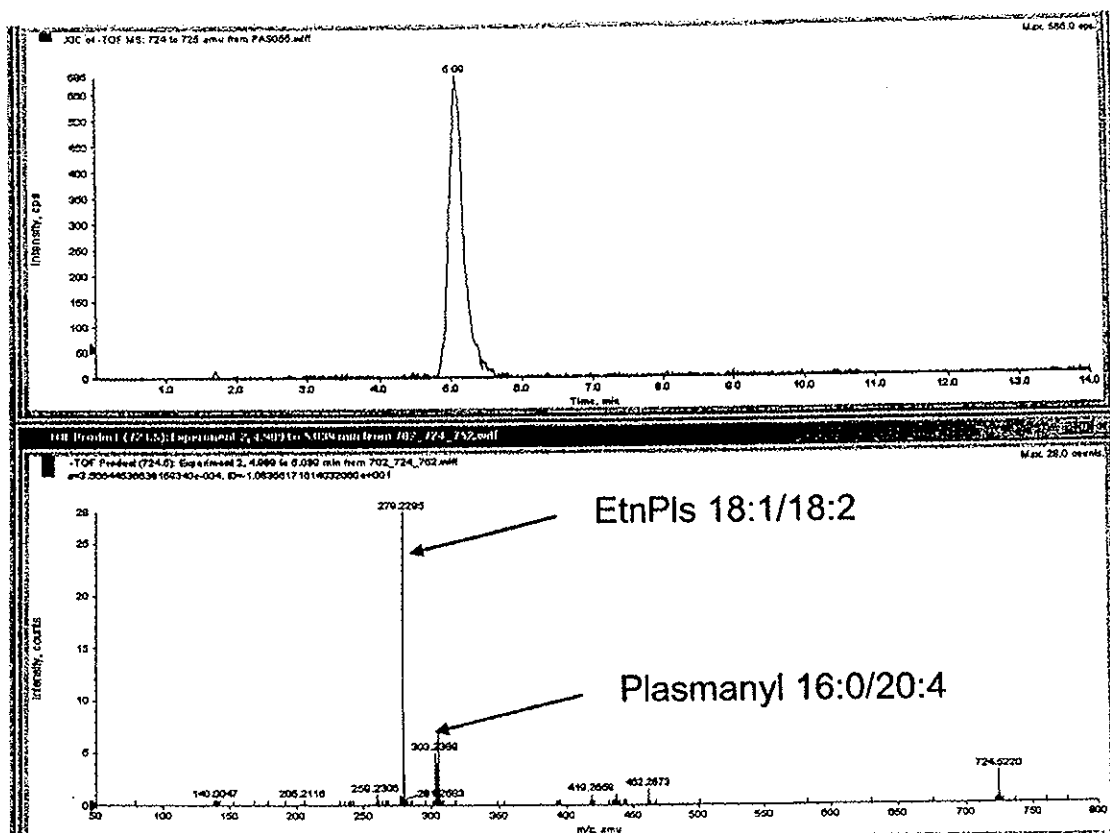


FIGURE 18

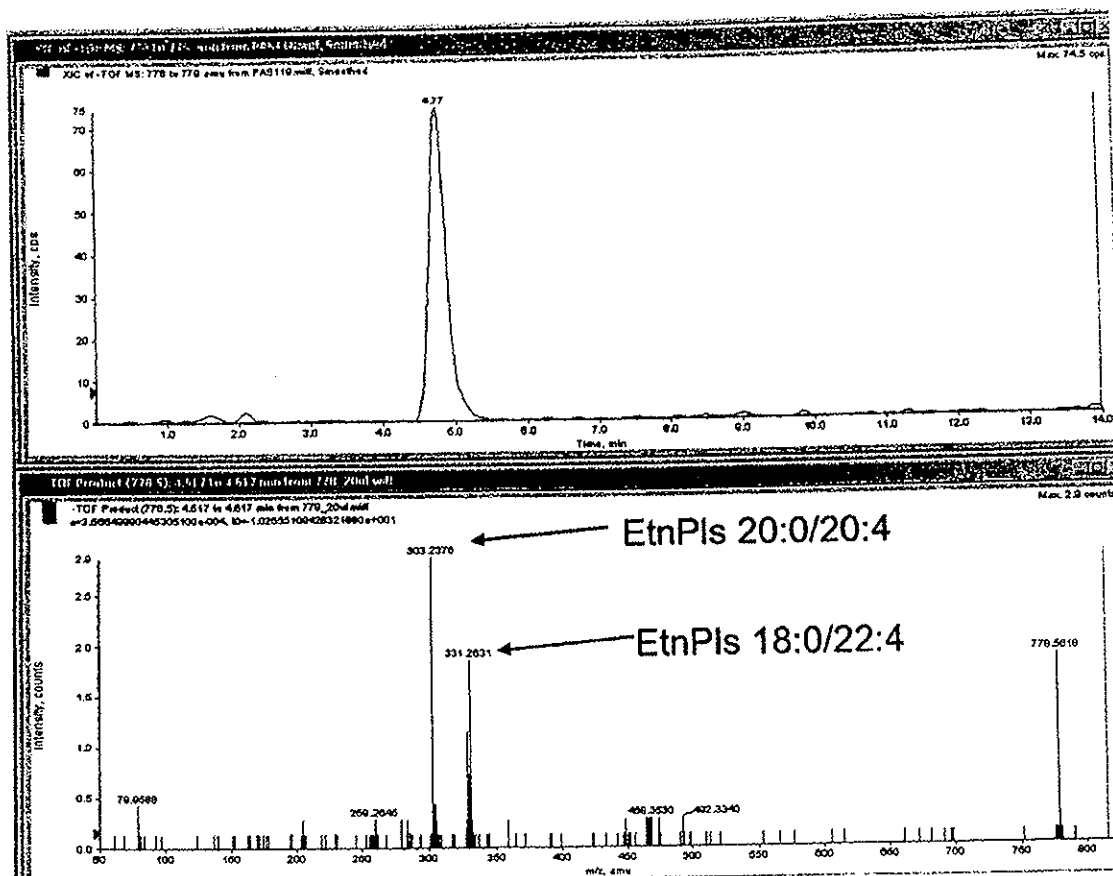


FIGURE 19

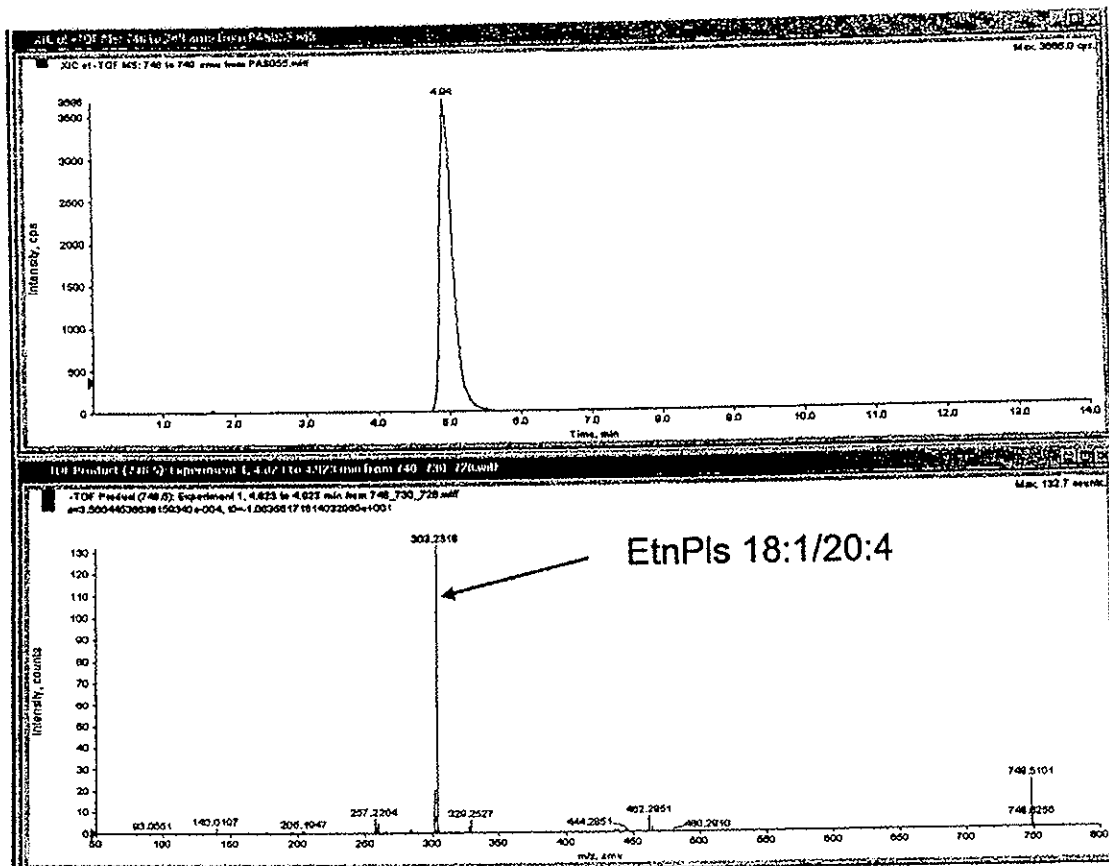


FIGURE 20

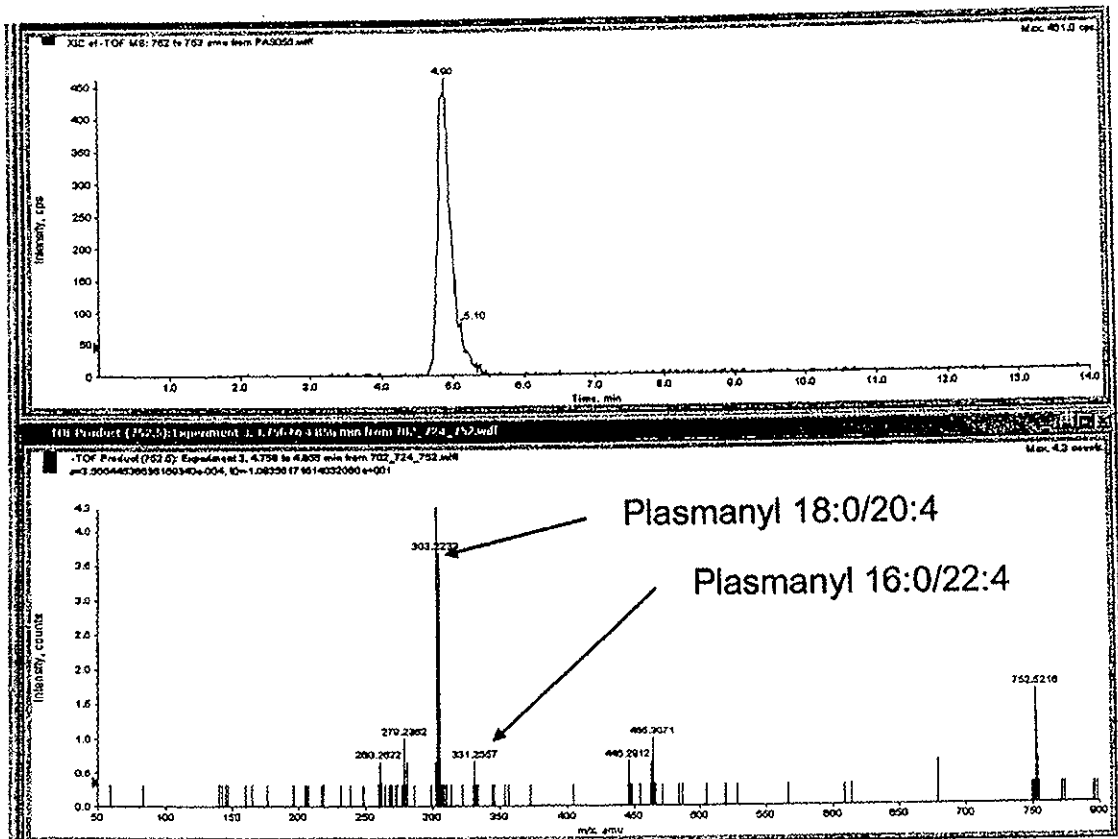


FIGURE 21

Plasmalogen Biosynthesis

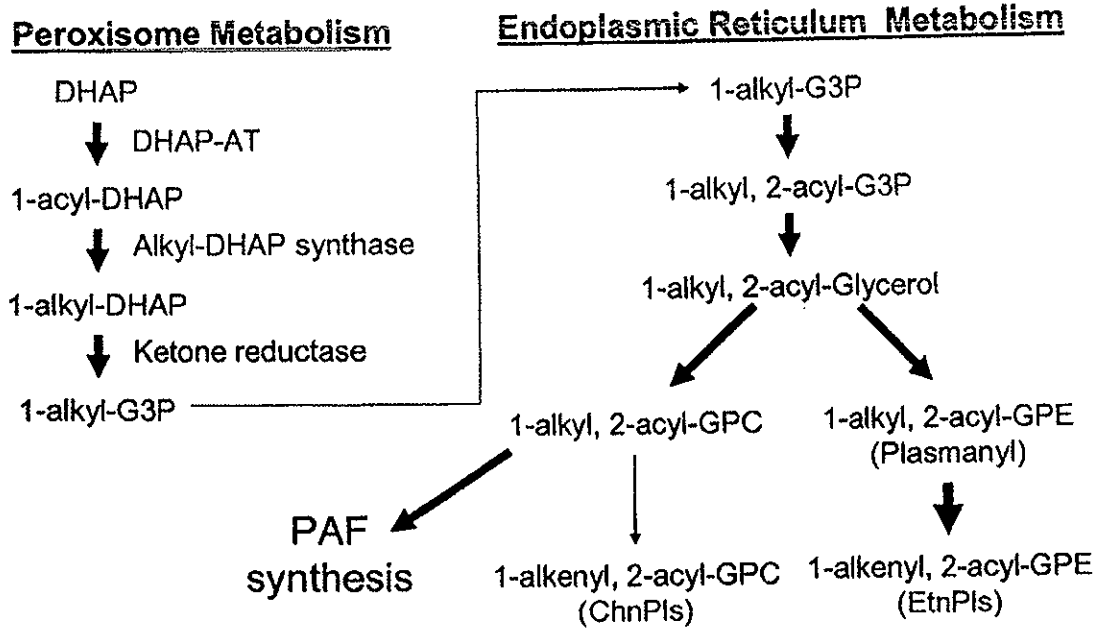


FIGURE 23

FIGURE 24

A. 1-O-1'-(Z)-octadecenyl-2-arachidoyl-*sn*-glycero-3-phosphoethanolamine (1)

HRAPCI-MS m/z : measured 750.5482. ($[M - H]^+$, calcd. 750.5477, for $C_{43}H_{77}NO_7P$).
MS/MS m/z (relative intensity): 750 ($[M - H]^+$, 25%), 482 (1%), 464 (12%), 446 (5%), 329 (8%), 303 (100%), 259 (12%), 205 (8%), 140 (8%).

Fragment Analysis:

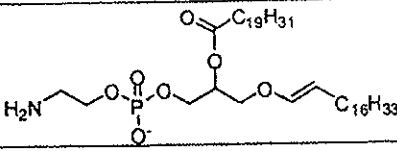
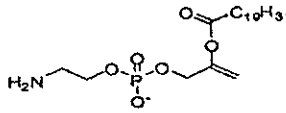
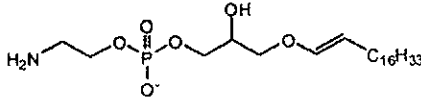
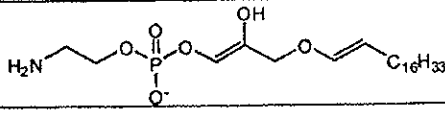
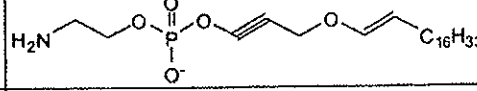
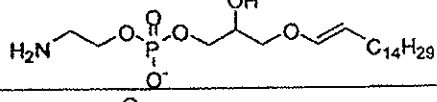
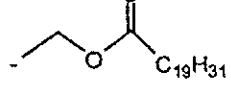
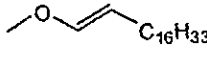
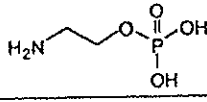
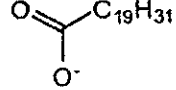
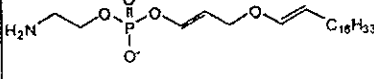
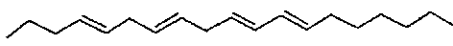
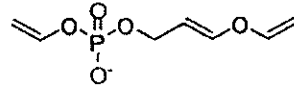
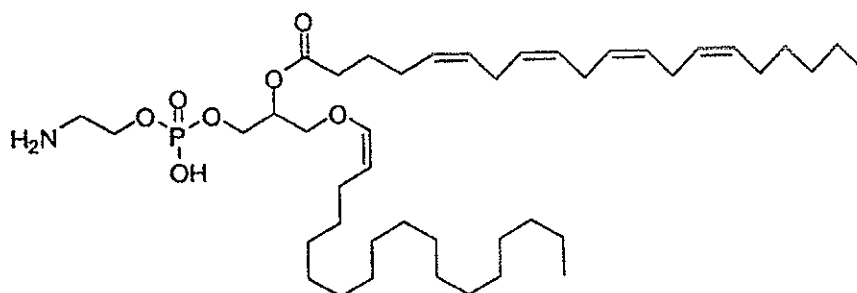
m/z	Formula	Molecular fragment	Fragment loss
750	$C_{43}H_{77}NO_7P$		H^+
482	$C_{45}H_{41}NO_6P$		$HO-C_{16}H_{33}$
464	$C_{23}H_{47}NO_6P$		$O=C_{19}H_{31}$
462	$C_{23}H_{45}NO_6P$		$O=C_{19}H_{31}$
444	$C_{23}H_{43}NO_5P$		$462 - H_2O$
436	$C_{21}H_{43}NO_6P$		$464 - C_2H_8$
331	$C_{22}H_{35}O_2$		i.  ii. 
303	$C_{20}H_{31}O_2$		
259	$C_{19}H_{31}$		$303 - CO_2$
205	$C_7H_{10}O_5P$		$464 - H_2O, C_{16}H_{32} \text{ \& } NH_3$

FIGURE 24 Cont'd

Proposed Structure:



B. 1-O-1'-(Z)-hexadecenyl-2-linoleyl-*sn*-glycero-3-phosphoethanolamine (2)

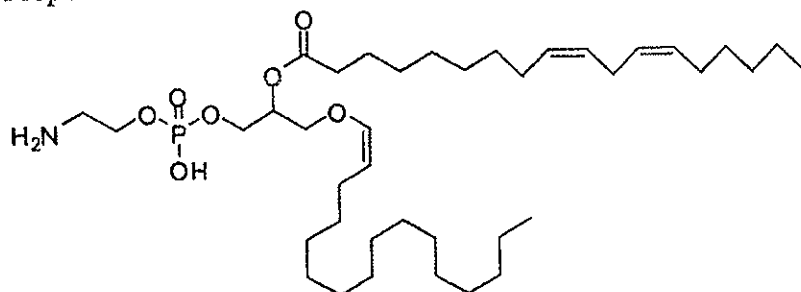
HRAPCI-MS m/z : measured 698.5125 ($[M-H]^+$, calcd. 698.5130 for $C_{39}H_{73}NO_7P$).
MS/MS m/z (relative intensity): 698 ($[M-H]^+$, 8%), 536 (4%), 279 (100%), 255 (15%), 119 (10%).

Fragment Analysis:

m/z	Formula	Molecular fragment	Fragment loss
698	$C_{39}H_{73}NO_7P$		H^+
458	$C_{23}H_{41}NO_6P$		$HO-C_{14}H_{29}$
436	$C_{21}H_{43}NO_6P$		$O-C_{17}H_{31}$
418	$C_{21}H_{41}NO_5P$		$436 - H_2O$
279	$C_{18}H_{31}O_2$		$H_2N-CH_2-CH_2-O-P(=O)(O^-)-O-CH_2-CH_2-O-C_{14}H_{29}$
255	$C_7H_{15}NO_5P^-$		$436 - C_2H_5$ & $H_2N-CH_2-CH_2-O-P(=O)(O^-)-O-CH_2-CH_2-O-C_{14}H_{29}$

FIGURE 24 Cont'd

Proposed Structure:



C. 1-O-1'-(Z)-hexadecenyl-2-arachidoyl-*sn*-glycero-3-phosphoethanolamine (3)

HRAPCI-MS m/z : measured 722.5124 ($[M-H]^-$, calcd. 722.5130 for $C_{41}H_{73}NO_7P$).

MS/MS m/z (relative intensity): 722 ($[M-H]^-$, 12%), 482 (1%), 436 (15%), 418 (6%), 303 (100%), 279 (6%), 259 (15%), 255 (10%), 205 (4%), 140 (5%).

Fragment Analysis:

m/z	Formula	Molecular fragment	Fragment loss
722	$C_{41}H_{72}NO_7P$		H^+
482	$C_{25}H_{41}NO_6P$		$HO-C_{14}H_{29}$
466	$C_{24}H_{37}NO_6P$		$482 - CH_4$
436	$C_{21}H_{43}NO_6P$		$O-C_{19}H_{31}$
418	$C_{21}H_{41}NO_5P$		$O-C_{19}H_{31}$
303	$C_{20}H_{31}O_2$		$H_2N-CH_2-CH_2-O-P(=O)(OH)-O-$
279	$C_{19}H_{35}O$		$418 - H_2N-CH_2-CH_2-O-P(=O)(OH)-O-$
259	$C_{19}H_{31}$		$303 - CO_2$
255	$C_{15}H_{27}O_3$		$418 - H_2N-CH_2-CH_2-O-P(=O)(OH)-O-$ & C_4H_{10}
205	$C_7H_{10}O_5P$		$418 - C_{14}H_{30} \text{ \& } NH_3$

140	$C_2H_7NO_4P$		
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Proposed Structure:

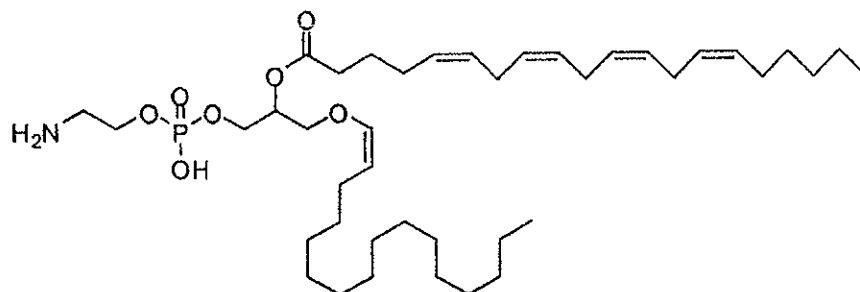
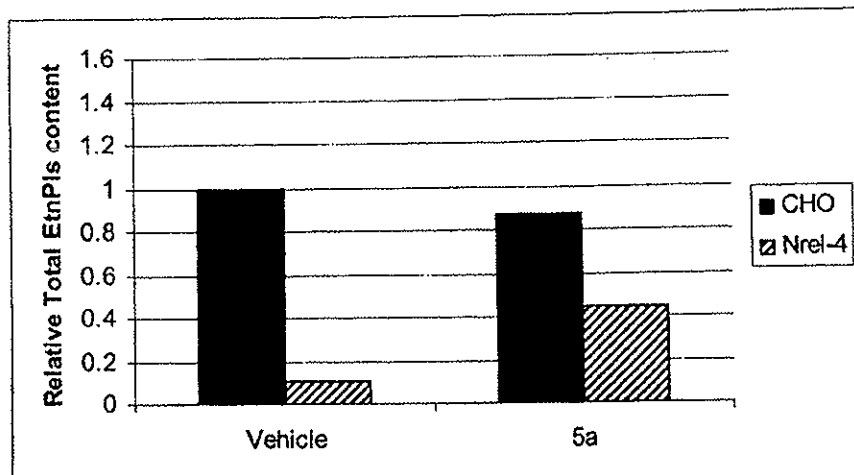
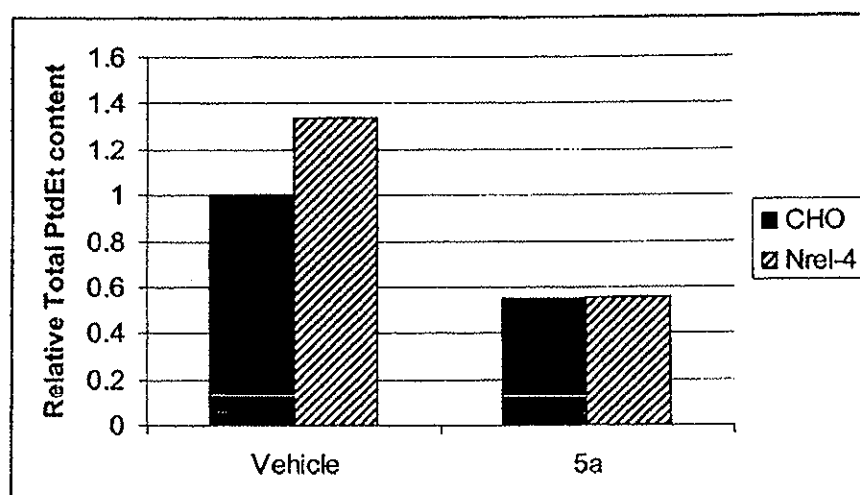


FIGURE 24 Cont'd

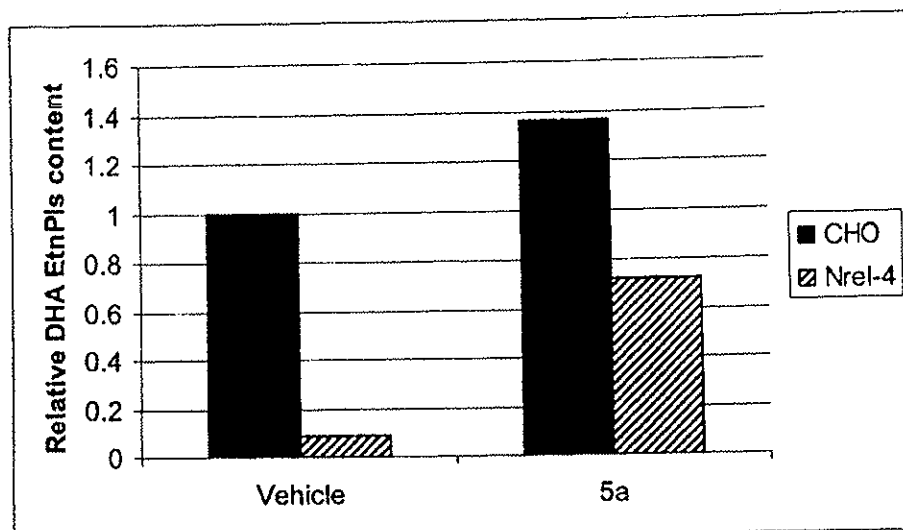


A

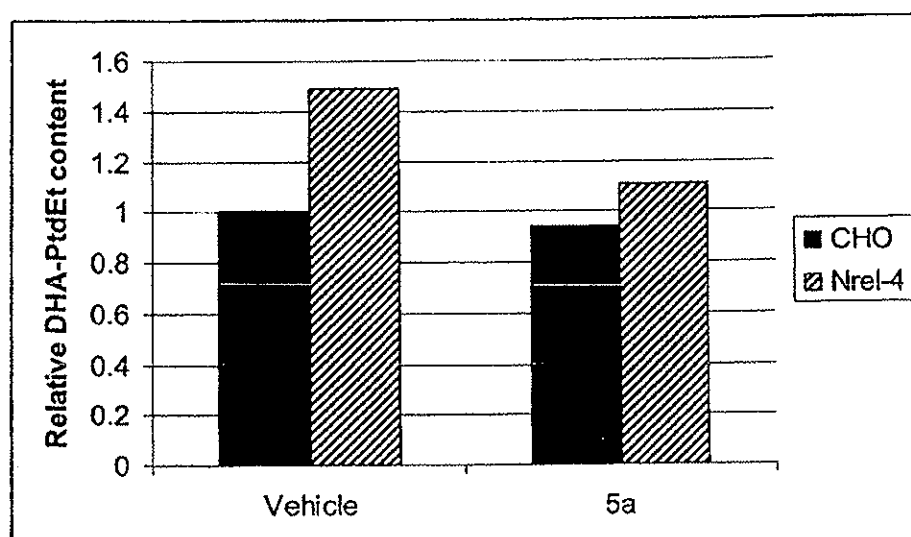


B

FIGURE 25



A



B

FIGURE 26

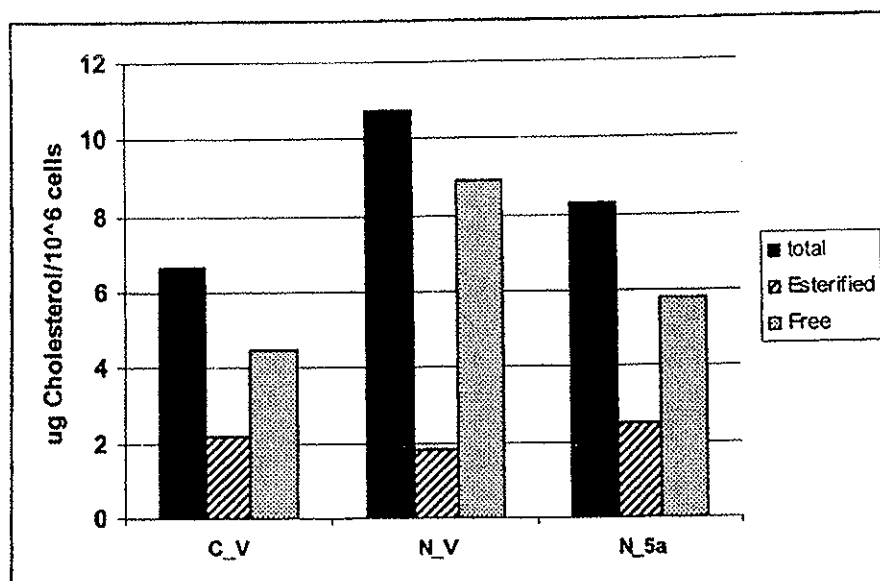


FIGURE 27