**Figure 1**

(A) Natural reaction

mevalonate 5-diphosphate
(3-hydroxy-3-methyl-5-diphosphopentanoate)

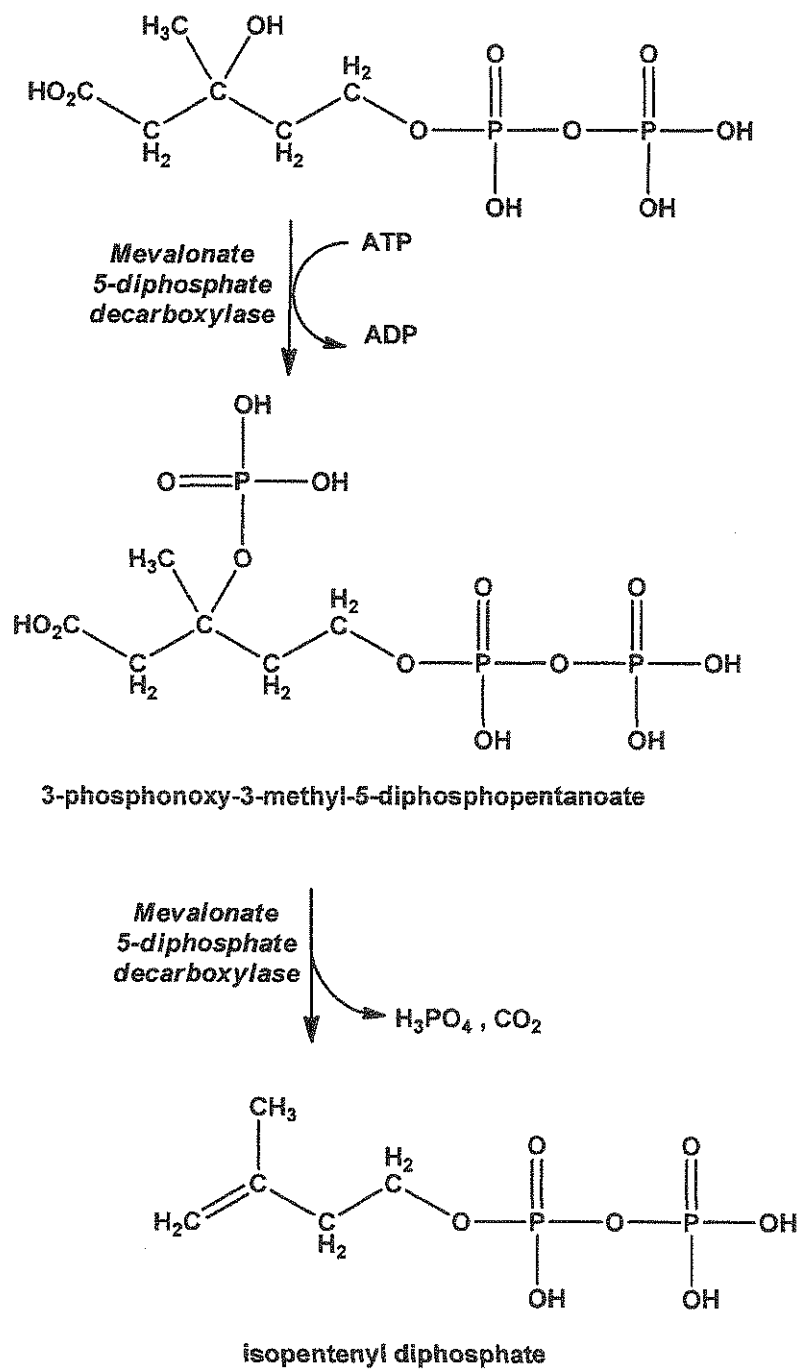
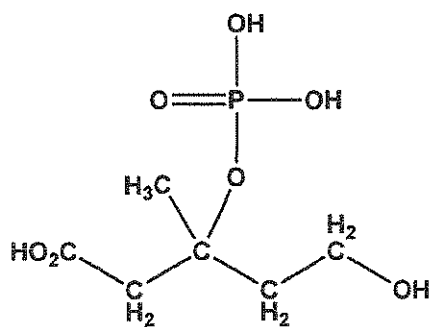
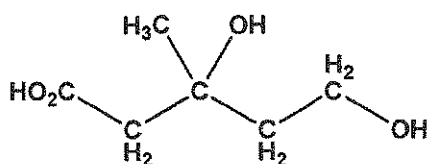


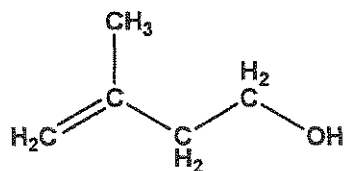
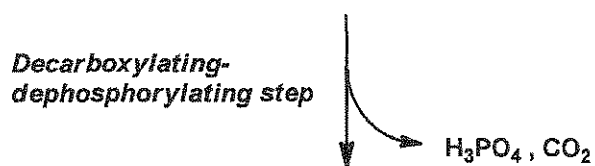
Figure 2 A

(B) Target reaction

mevalonate
(3,5-dihydroxy-3-methylpentanoate)

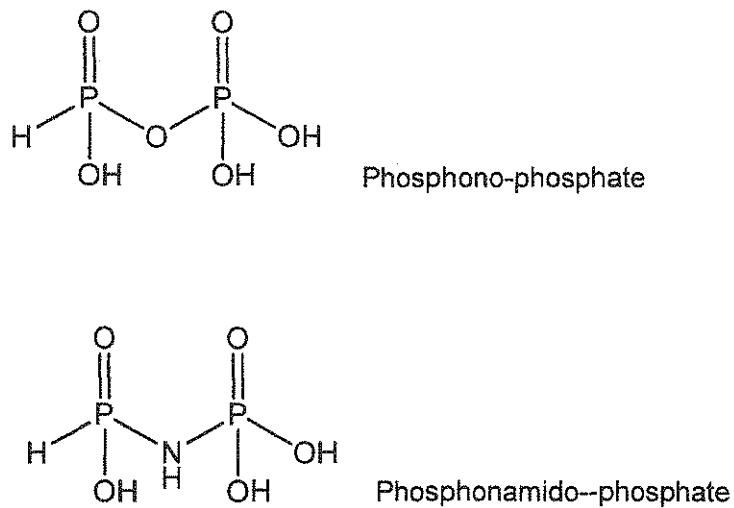


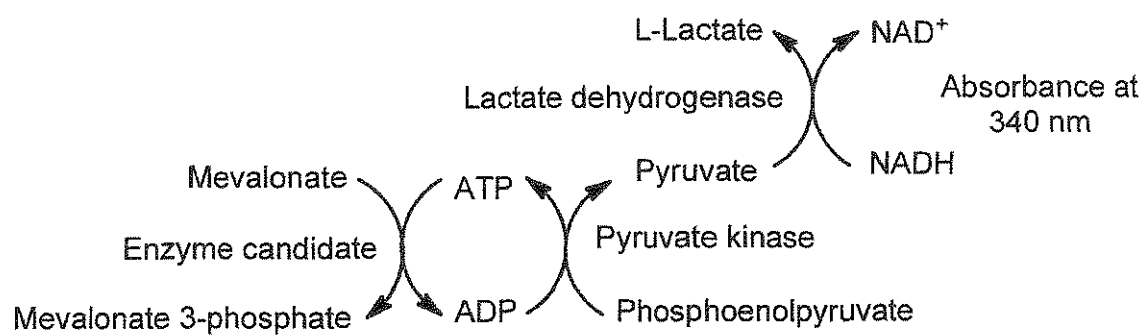
mevalonate 3-phosphate
(3-phosphonoxy-3-methyl-5-hydroxypentanoate)

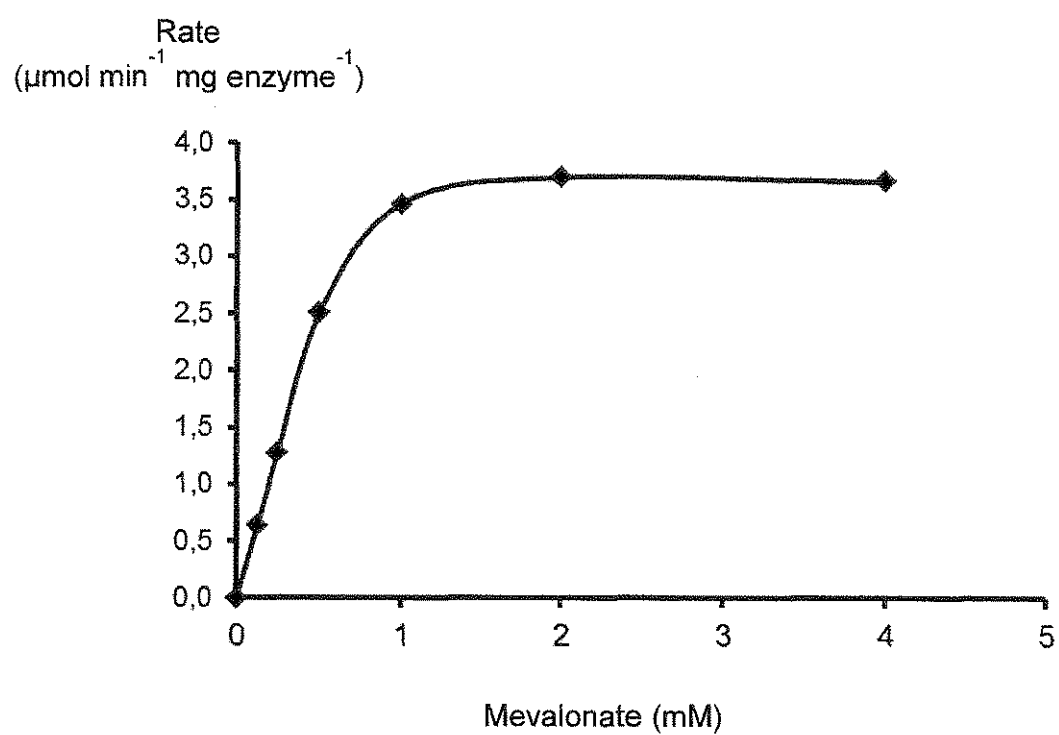


isoprenol

Figure 2 B

**Figure 3**

**Figure 4**

**Figure 5**

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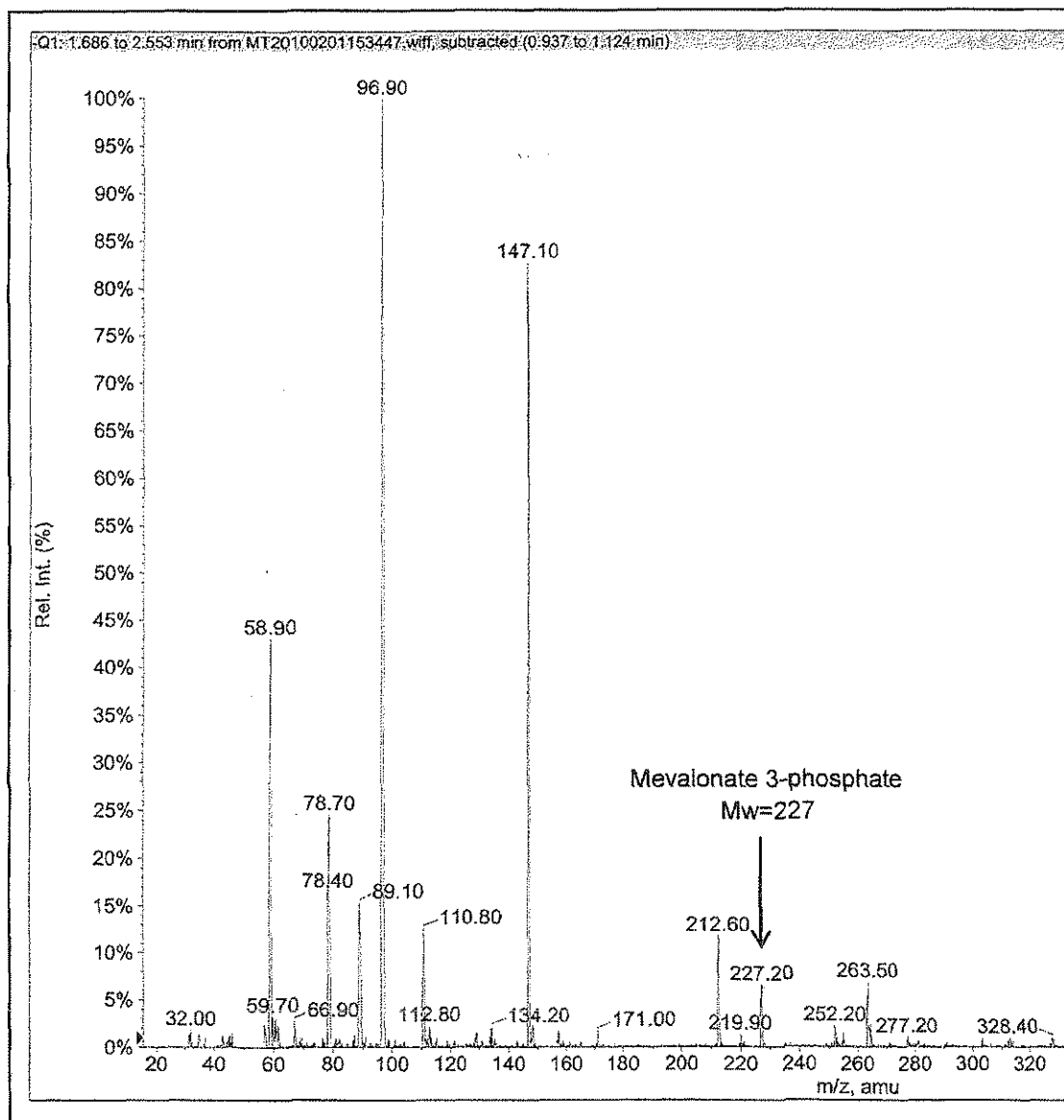


Figure 6a

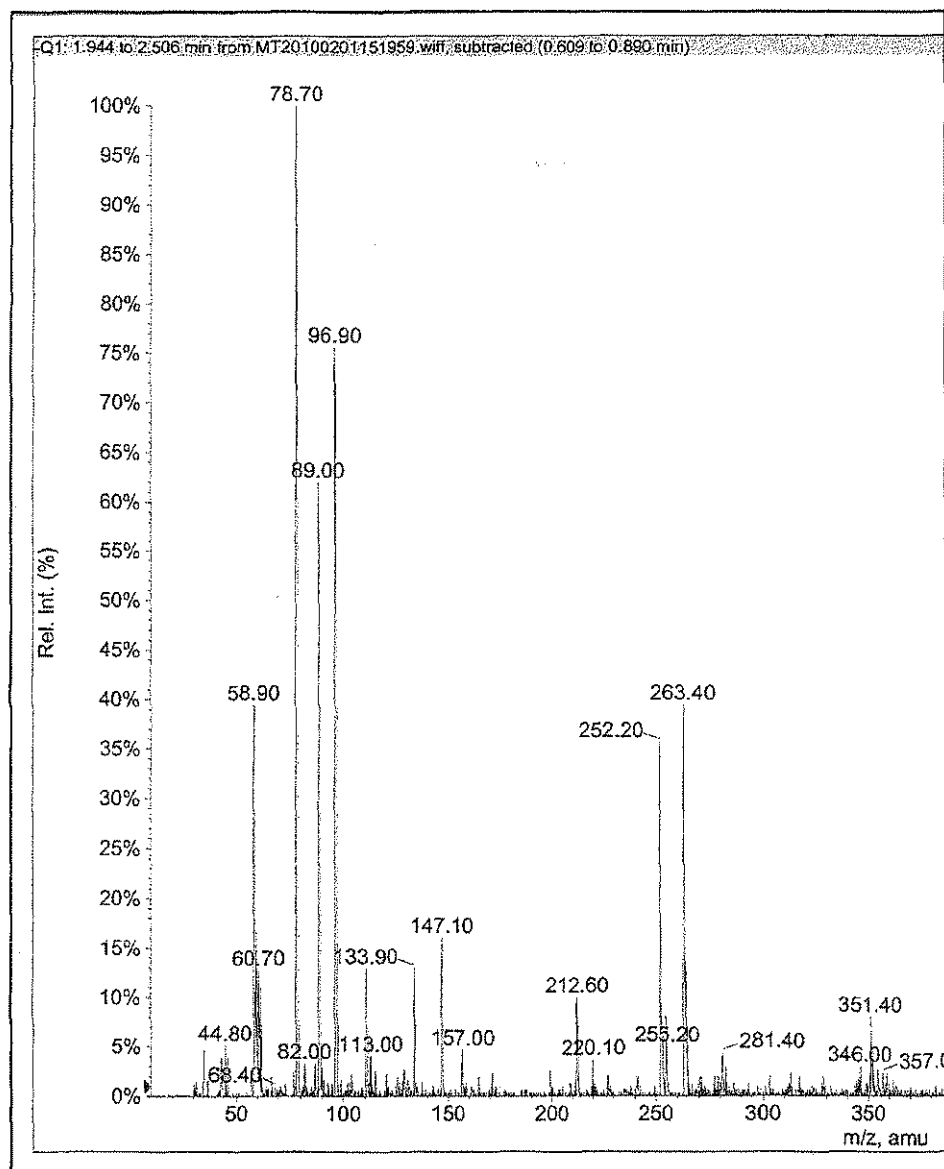


Figure 6b

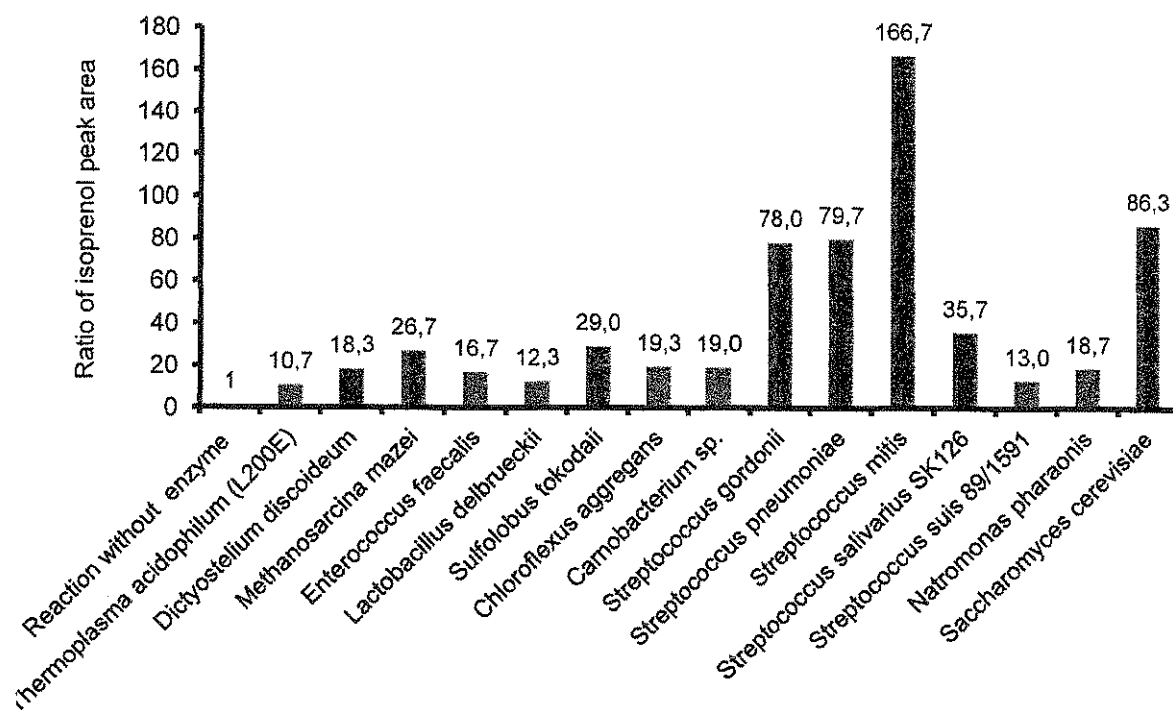
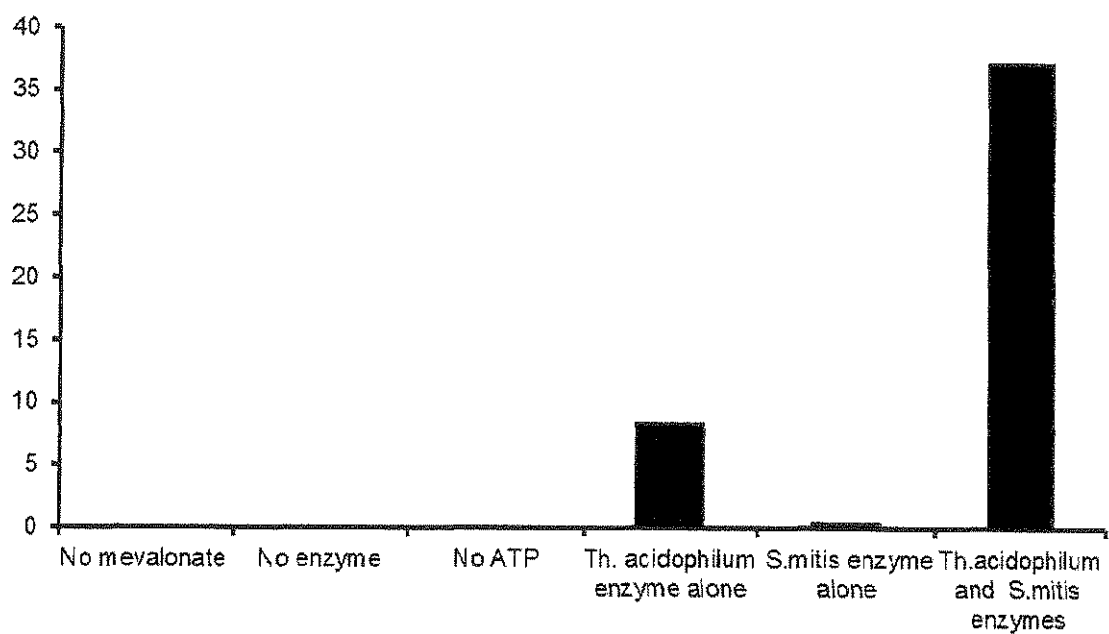


Figure 7

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Isoprenol peak area,
arbitrary units



	Assay composition					
Mevalonate		+	+	+	+	+
ATP	+	+		+	+	+
Th. acidophilum enzyme	+		+	+		+
S. mitis enzyme	+		+		+	+

Figure 8

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Relative abundances

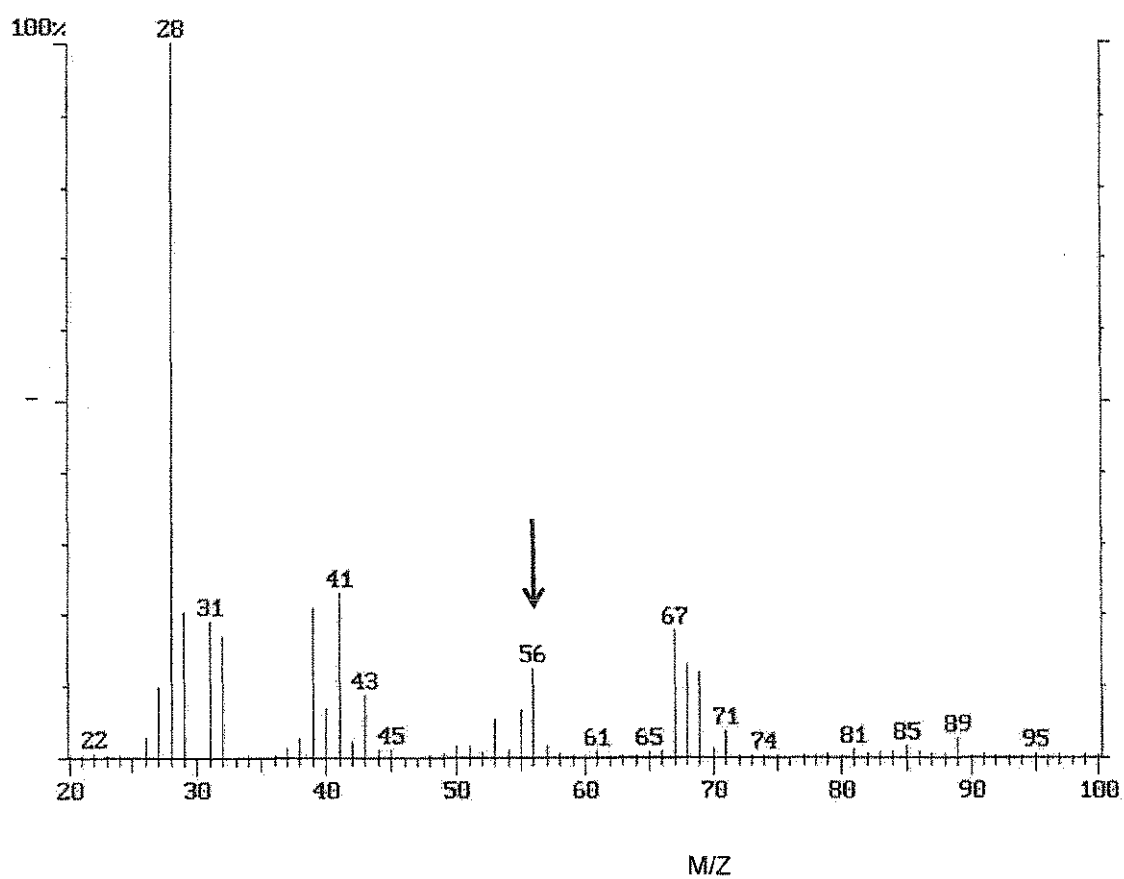


Figure 9a

Relative abundance

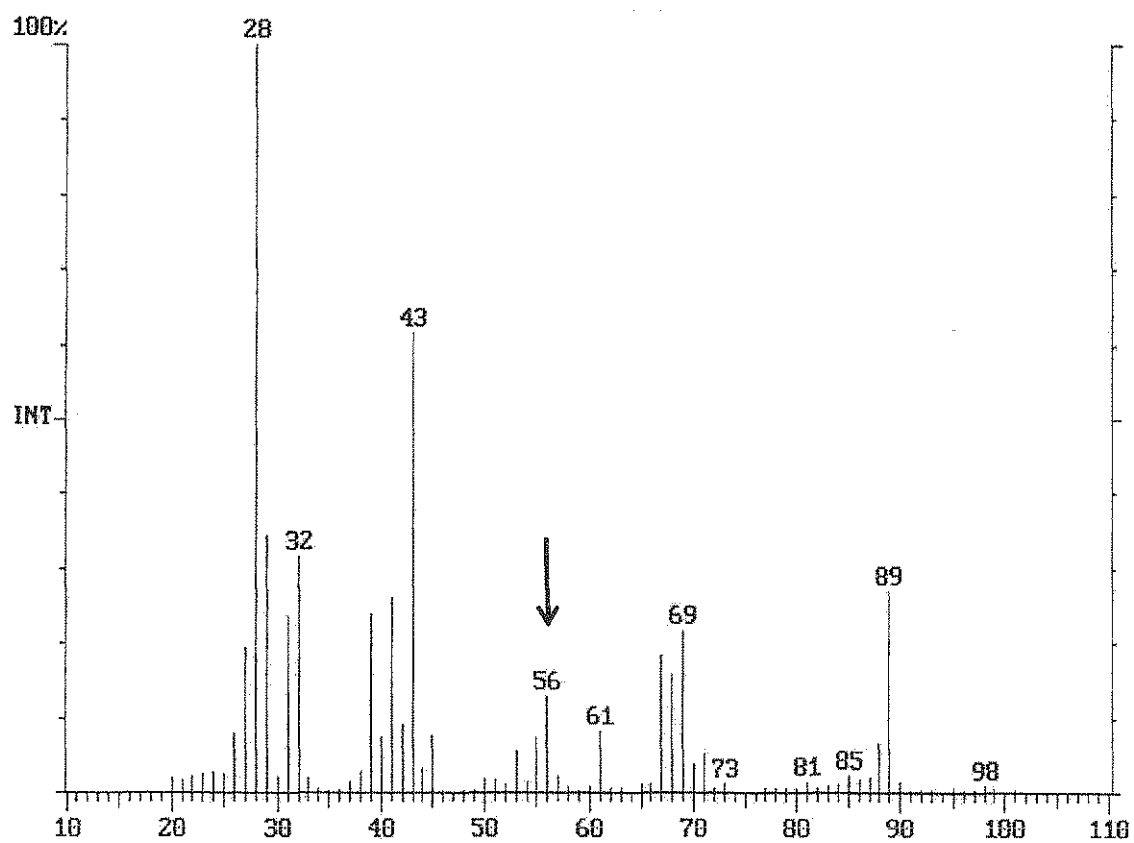


Figure 9b

Rate of isoprenol production, pmol min^{-1}

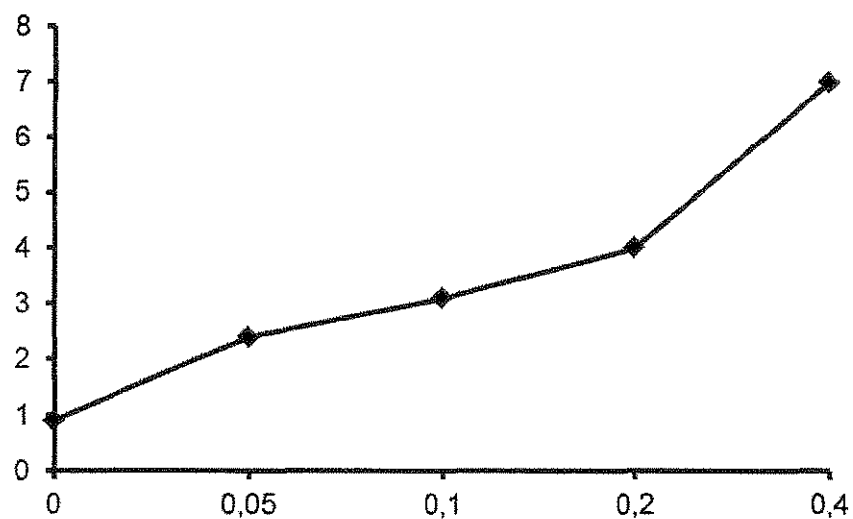


Figure 10

mg MDP decarboxylase S. mitis

Isoprenol peak
area,
arbitrary units

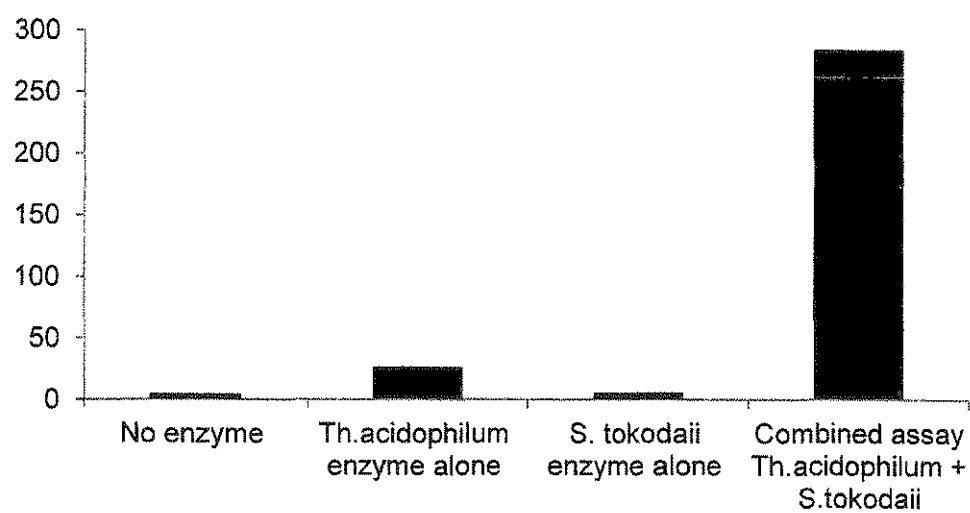
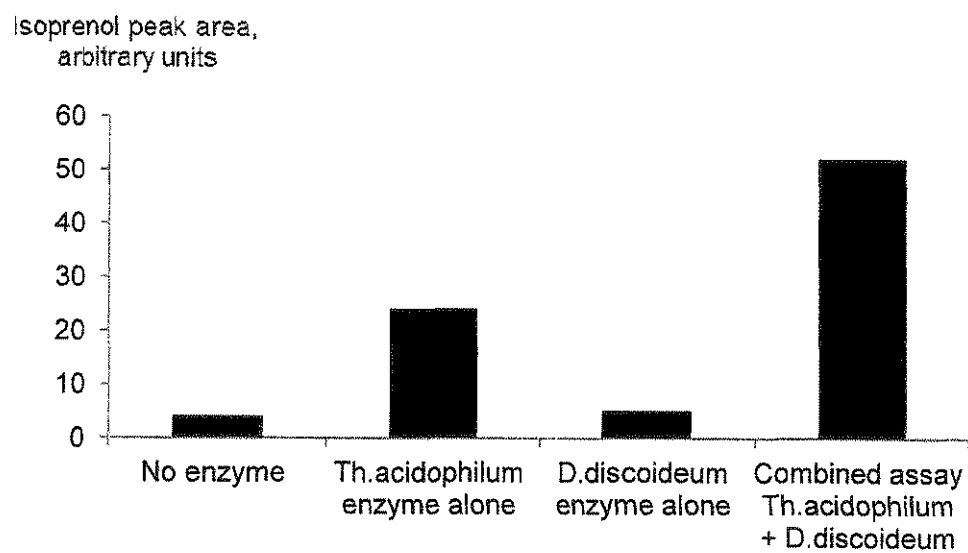


Figure 11

**Figure 12**