

Supplemental Table 1: Hydroxylating activity of CYP52M1 against various fatty acids.

(- no hydroxylation; + <10% substrate conversion, ++ 10–25% substrate conversion).

Fatty acid	Activity
C12:0	-
C14:0	-
C16:1 ^{Δ9}	++
C16:0	++
C18:3 ^{Δ6, Δ9, Δ12}	++
C18:3 ^{Δ9, Δ12, Δ15}	++
C18:2 ^{Δ9, Δ12}	++
C18:1 ^{Δ9}	++
C18:0	++
C20:4 ^{Δ5, Δ8, Δ11, Δ14}	+
C20:1 ^{Δ11}	+
C20:0	-
C22:0	-

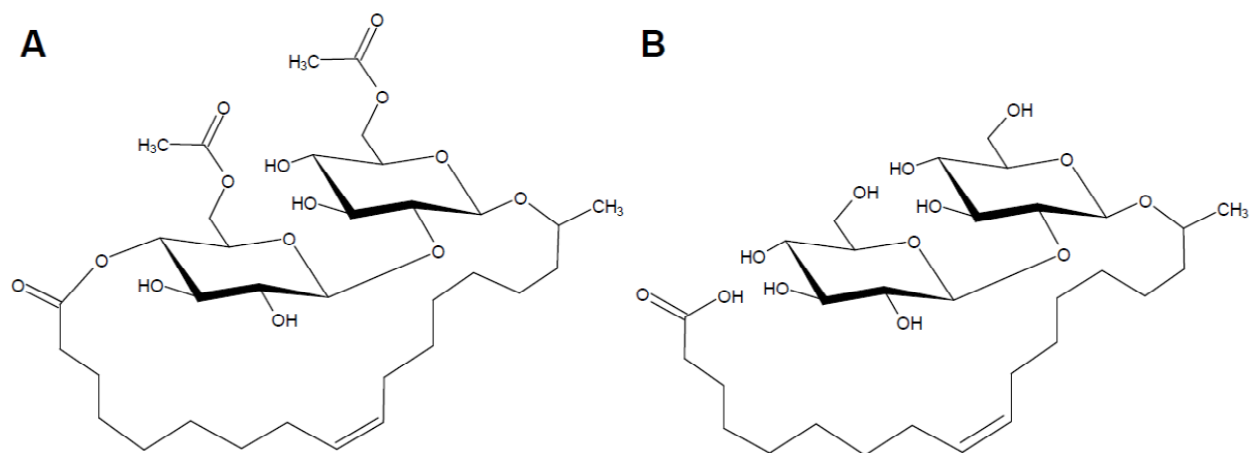


Fig. S1. Examples of sophorolipids produced by *S. bombicola*. (A) diacetylated lactonic sophorolipid, (B) non-acetylated open-chain sophorolipid.

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      10      20      30      40      50      60      70      80      90     100
CYP52M1  MLIKDIILTPMSTSAVAGLLPFLVFAFLVLEPIWLLWYRYAARRHKCSMPRETEKSFPLGIQRTMDMIKTAKSYTLLLEVQYDRVFNKFKARTYLRQAPL
CYP4A11  MSVSVLSPSRL-LGDVSGILQAASLLILLIKAVQLYLHROWL-LKALQQEPCPP-SHWLFGHIQELQDDQE----LQRIQKVVETFPACPHWLWGG
CYP4F2   --MSQLSLSWLGLWVVAASFWLLLLLVGASWLLAHVLAWTYAFYDNCRRRLRCEPQPPRRNWFVGHQGMVNPTEEG---MRVLTQLVATYPQGFKVMWGP

      110     120     130     140     150     160     170     180     190     200
CYP52M1  QYQIFTEIENIKTILATKFN-DFGLGARFHTVGKVFQGGIFTLSCNGFKQSRSMIRPQETKDQVCRIDQISSHAAELIKEMNRAMK--VDQFIDVQHYF
CYP4A11  KVRVQLYDFDYMKVILGRS---DPKSHGSRFLAPWICYGLLLNCGTWFQHRRLMTPAFHYDILKPYVGLMADSVRVMLDKWEELLGQDSP-LEVFOHV
CYP4F2   SPLLSLCHPDIIIRSVINASAAIAPKDKFFYSFLEFWLGDGLLSACDKNSRHRRLMTPAEHFNIIKPYMKIFNESVNIIMHAKWQLLASEGSACLDMFEHI

      210     220     230     240     250     260     270     280     290     300
CYP52M1  HKLTLDTATEEFLGESCESLNPENQSCIVARDGSEITAEQFVESYNFLNLYAFKRTLSSKVYWLFNSEKFRDHKKRAQSYIDYVVKAIYATSFAAENSI
CYP4A11  SLMTLDTIMKCAFESHQGSIQVDRNSQSYIQ-AISDLNVLVFSRVNNAFHQNDTIYSLTSAGRWTHRACQLAHQHTDQVIQLR---KAQIQKEGE---LEK
CYP4F2   SLMTLDLSLQKCVESFDSHCQE--KPSEYIA-AILELSALVSKRHHEILLHIDFLYLLTPDGQRFRRACRLVHDFDAVIQER---RRTPSQGVDDFLQA

      310     320     330     340     350     360     370     380     390     400
CYP52M1  AEKDAEAESSGIYVFSLEMAKVTRDPVTTFDQIFNIIAGRDTTAATLSFAIHFILARNPDVFNKLRREVLDFHGTKEEQRPLSFELIKQAPYLKQVINQV
CYP4A11  IKRRRHLDFLDILLAKMENGSLSDKDLRAEVDTFMFECHDTTASGTSWILYALATHPKHQERCREEIHSLLDG---ASITWNHLDQMPYTTMCIKSA
CYP4F2   KAKSKTLDFTDVLILLSKDEDGKLSDEDIRAEADTFMFECHDTTASGLSNVLYHLAKHPEYQERCROEVQELLKDRE-PKEIEWDDLHLPLFLTMCKES

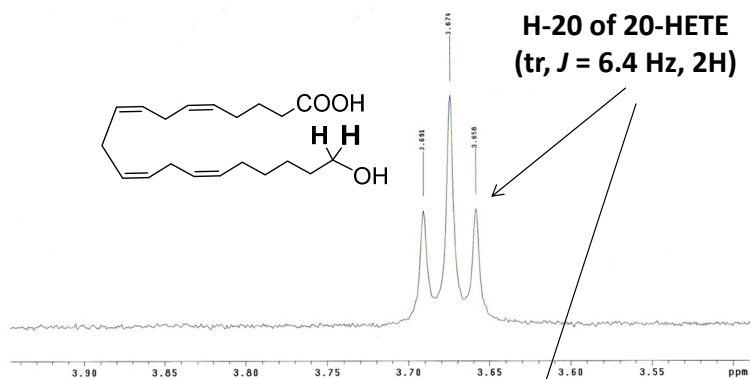
      410     420     430     440     450     460     470     480     490     500
CYP52M1  LRLAPVLPINFRFAVRDITLPIGGPEQKDPFVFPKGTAVYYSIYMVHRDIKYWCPDAHEFNPNRWENL--KLDNVWAFIPFNGCPRIICIQOQFALTELS
CYP4A11  LRLVPPVPGIGRELSTPVTFPDGRS-----LPKGLMVLISYGLHHPKVW-PNPEVDFPFRFAPG--SAQSHAEIPFSGCSRNCICKQFAMNELK
CYP4F2   LRLVPPVVISRHVTQDIVLPDGRV-----LPKGIICLISVFGTHTNPAVW-PDPEVYDFPFRFDPENIKERSPLAIPFSAGPRNCIGOTFAMAEMK

      510     520     530     540     550
CYP52M1  LTLVRLQEYSKIEMGPDFEESPRFSTTITTAQHAPPGVVVRF-----
CYP4A11  VATALTLRFELLDPTRIEIPI-ARLVKSKNGIHLRLRRLPNPCEDKDQL
CYP4F2   VVLALTLRFERVLDPHT-ERRK-PELVIRAEGLWLRVEPLS-----

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Fig. S2. Alignment of the CYP52M1 protein (Genbank Accession Number EU552419) with human CYP4A11 (Genbank Accession Number AAA58436) and CYP4F2 (Genbank Accession Number AAI36300). Multiple sequence alignments were made with the CLUSTAL W program.

^1H NMR of purified
20-HETE peak



^1H NMR of flash
column fraction
containing
19/20-HETE

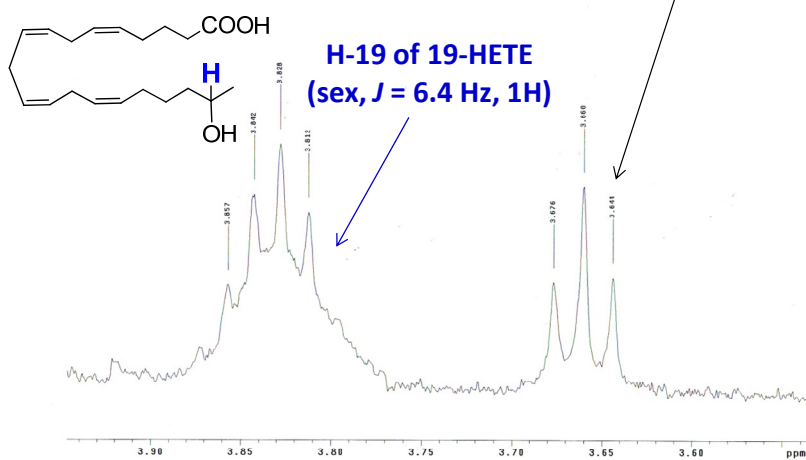


Fig. S3. 19- and 20-HETE show characteristic signals at δ 3.6-3.9 ppm.

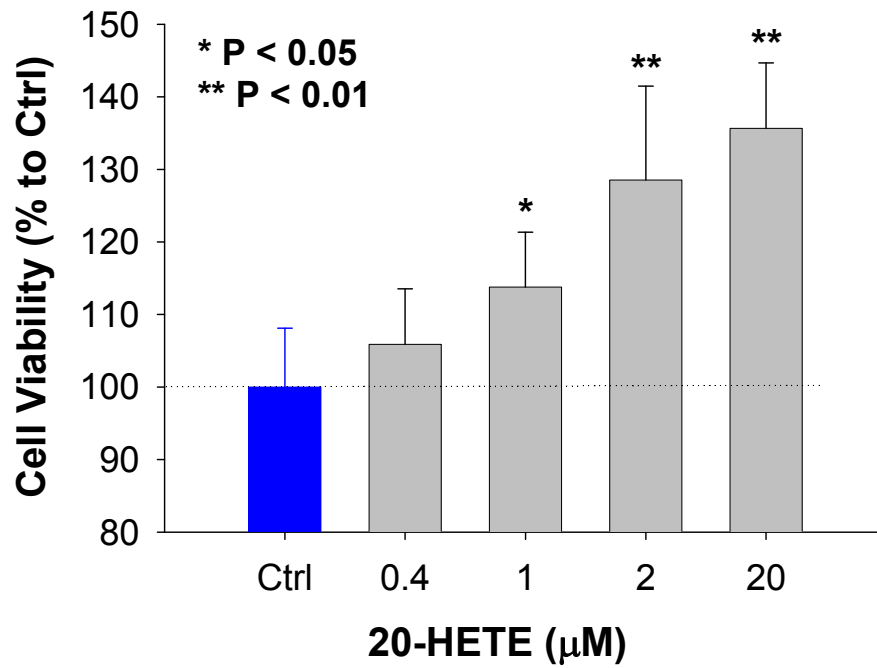


Fig. S4. 20-HETE increased endothelial cell proliferation in HUVECs after 18 h treatment. The HUVECs were serum-starved for 24h, then treated with 20-HETE in basal medium for 18 h, cell viability was assessed by a MTT assay.