Universidade Federal dos Vales do Jequitinhonha e Mucuri (UFVJM)

"Gliceroquímica: obtenção, purificação e aplicação do glicerol em processos de higienização".

Prof. Sandro Luiz Barbosa dos Santos

Palestras em Biocombustíveis – Seminários I
PPGBiocomb - UFVJM/UFU
2020

Biomass Conversion and Biorefinery
https://doi.org/10.1007/s13399-020-00745-7

ORIGINAL ARTICLE

Check for updates

Preparation of activated charcoal from *Acrocomia aculeata* for purification of pretreated crude glycerol

Sandro L. Barbosa[1] • Milton S. de Freitas[1] • Wallans T. P. dos Santos[1] • David Lee Nelson[1] • Maria Betânia de Freitas Marques[1] • Stanlei I. Klein[2] • Giuliano C. Clososki[3] • Franco J. Caires[3] • Eduardo J. Nassar[4] • Lucas D. Zanatta[5] • Foster A. Agblevor[6] • Carlos A. M. Afonso[7] • Adriano C. Moraes Baroni[8]

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Quadro I: Composição genérica de óleos alimentares.

Componente	%	Componente	ppm
		Tocoferóis	150 – 2000
Triglicéridos	90 – 99	Tocotrienóis	0,0 – 1500
Diglicéridos	0,0 – 0,2	Fenóis	0,0 – 50
Monoglicéridos	0,0 – 0,2	Clorofilas e derivados	0,0 – 20
Ácidos Gordos Livres	0,2 – 9,5	Carotenóides	0,0 – 500
Fosfolípidos	0,01 – 0,1	Metais	0,01 – 2,5
Esteróis	0,4 – 2,0	Materiais oxidados	0,01 – 2,5
Humidade	0,0 – 0,1	Proteínas	0,0 – 0,01
		Gomas	0,0 – 2,0

Fonte: Lopes, 2000.

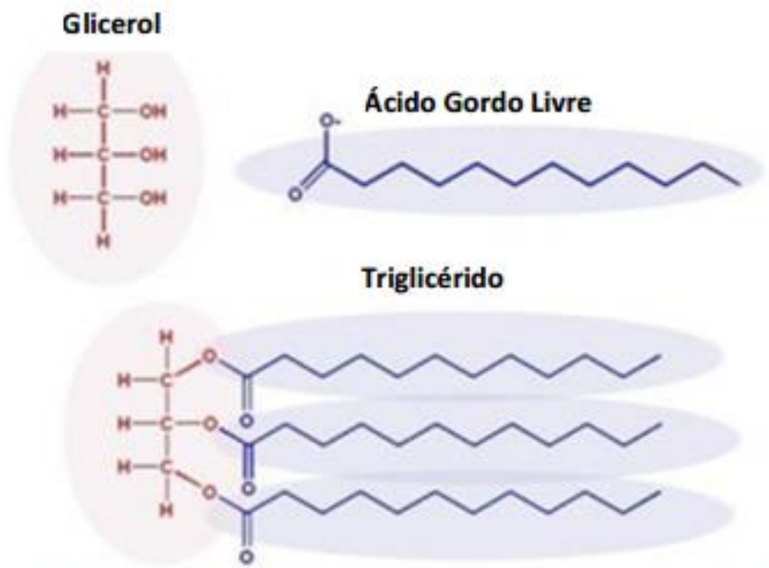
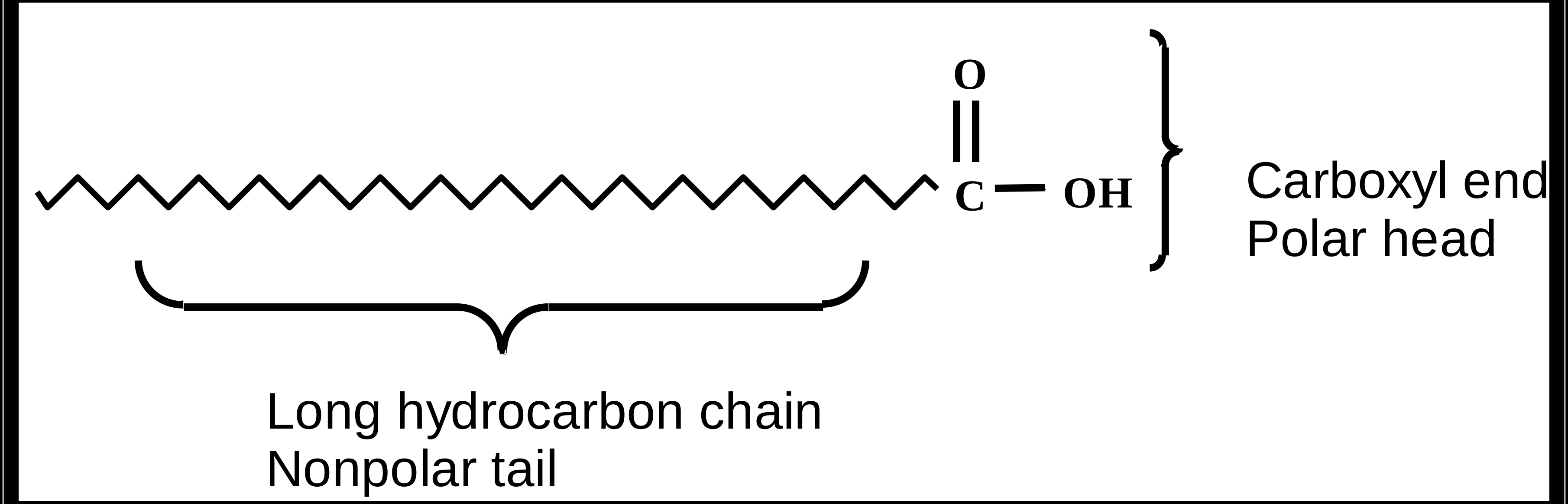
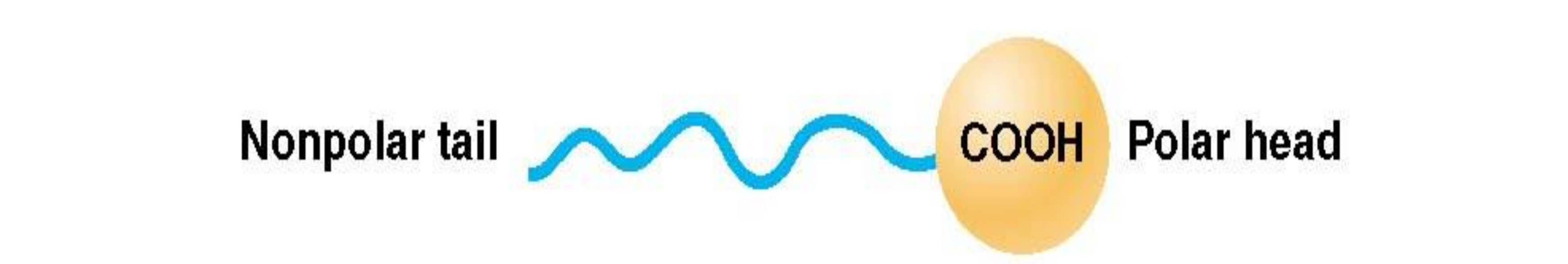
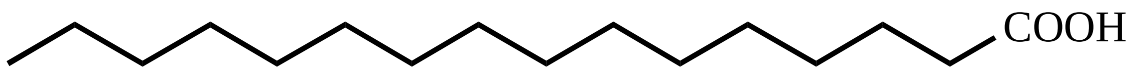


Figura 2: Esquema representativo da estrutura de um triglicérido.
Fonte: http://www.medicinapreventiva.com.ve/laboratorio/trigliceridos.htm

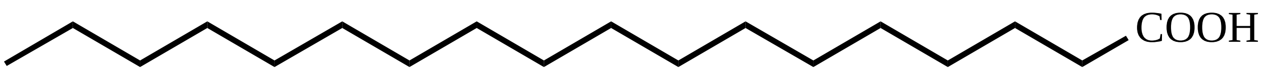

O
C
OH
Carboxyl end
Polar head
Long hydrocarbon chain
Nonpolar tail


Nonpolar tail
COOH
Polar head

Saturated Fatty Acids

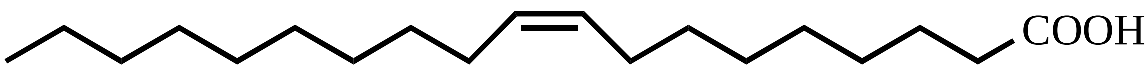


Palmitic acid

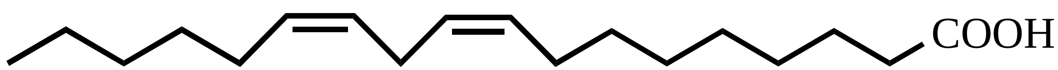


Stearic Acid

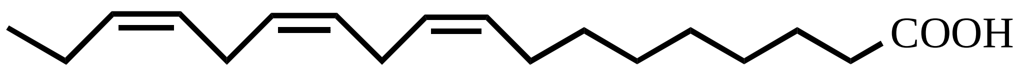
Unsaturated Fatty Acids



Oleic Acid



Linoleic Acid

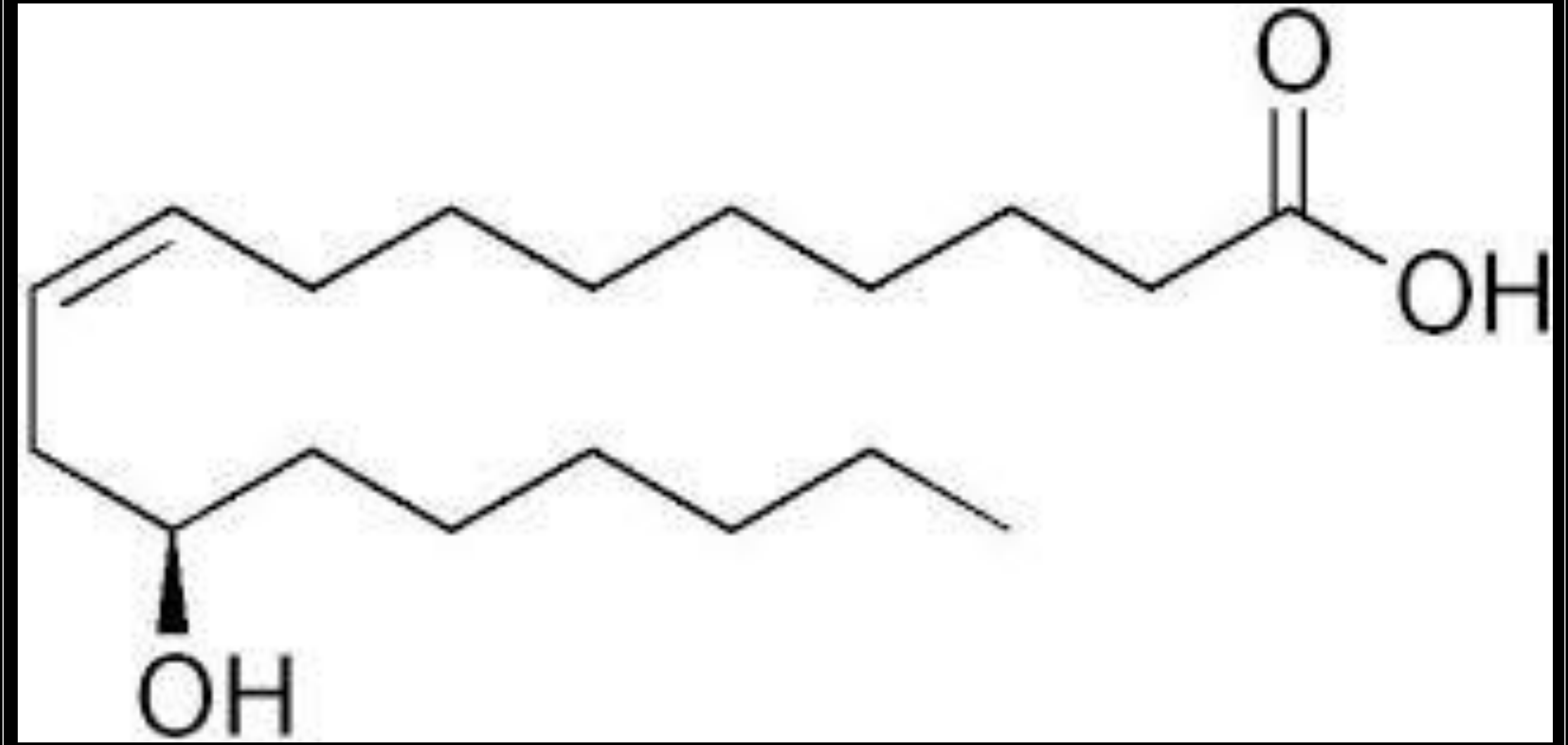


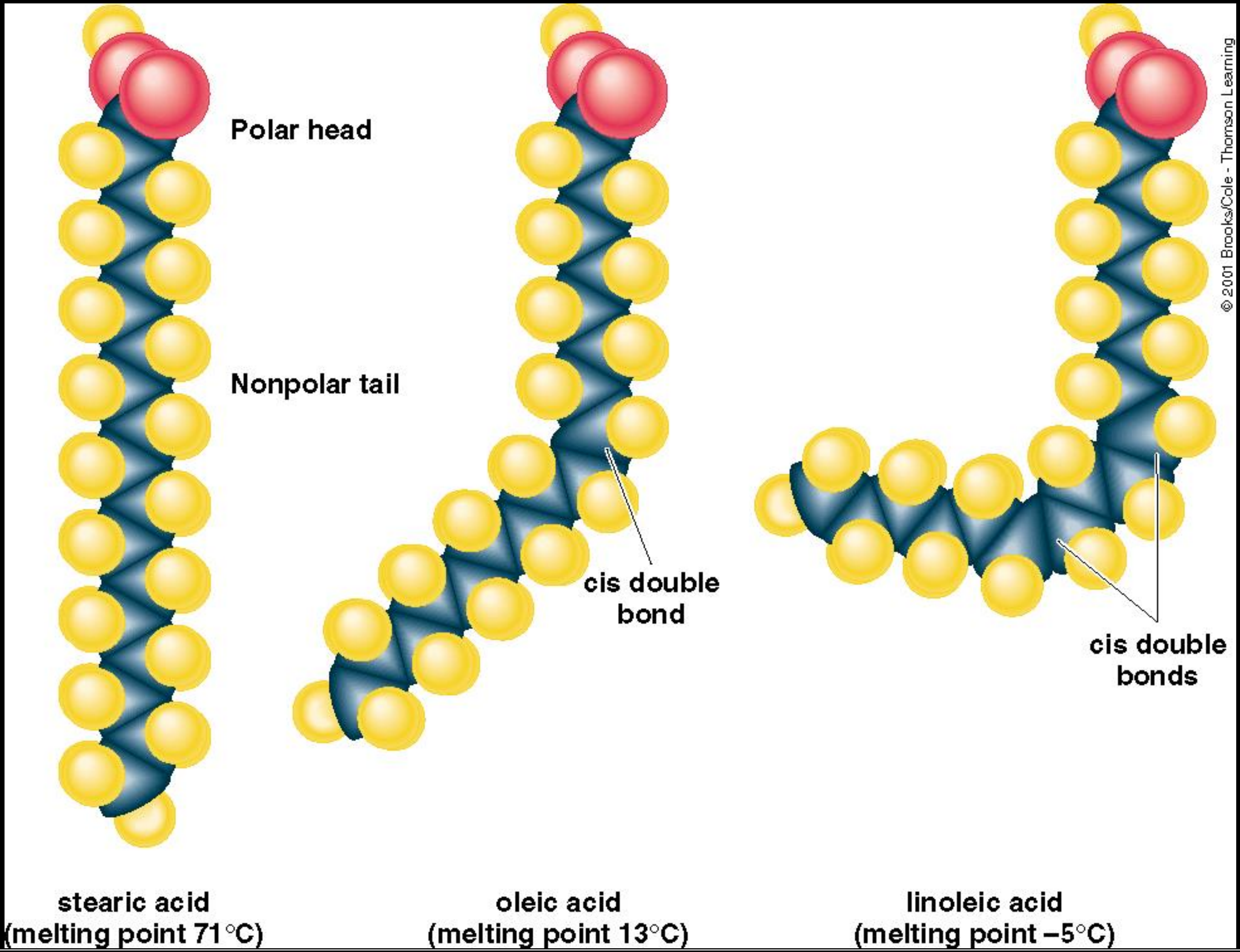
Linolenic Acid

Arachidonic Acid

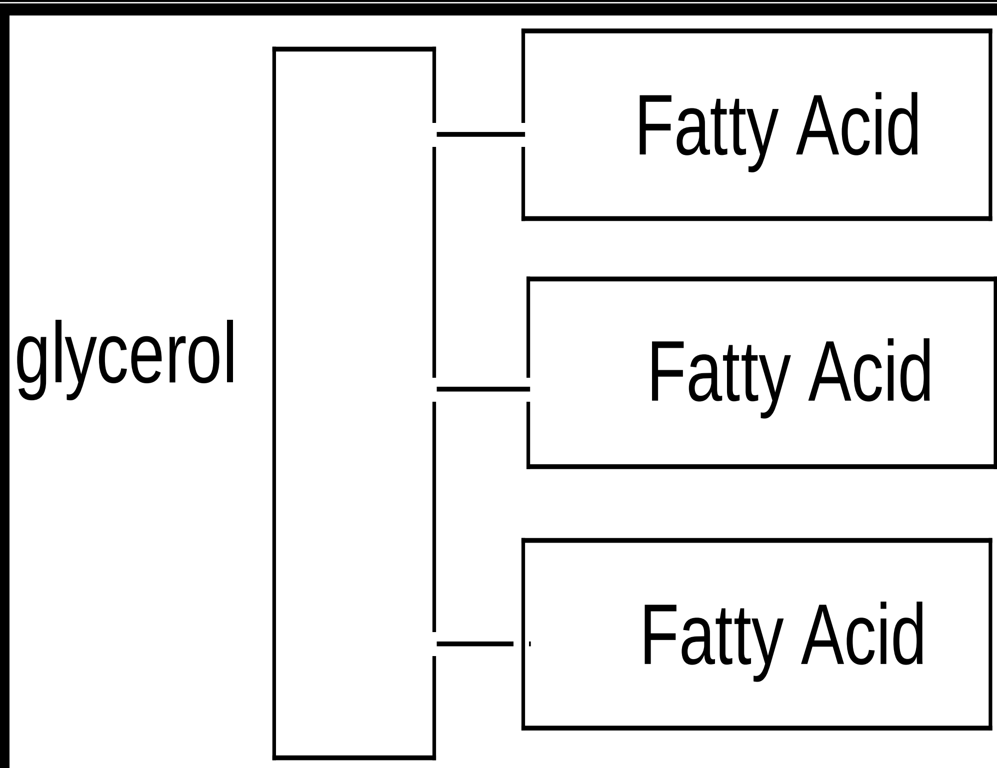
NOTE: Linoleic, linolenic, and aracidonic acids are examples of polyunsaturated fatty acids. Linoleic and linolenic acids are also the two essential fatty acids your body needs.

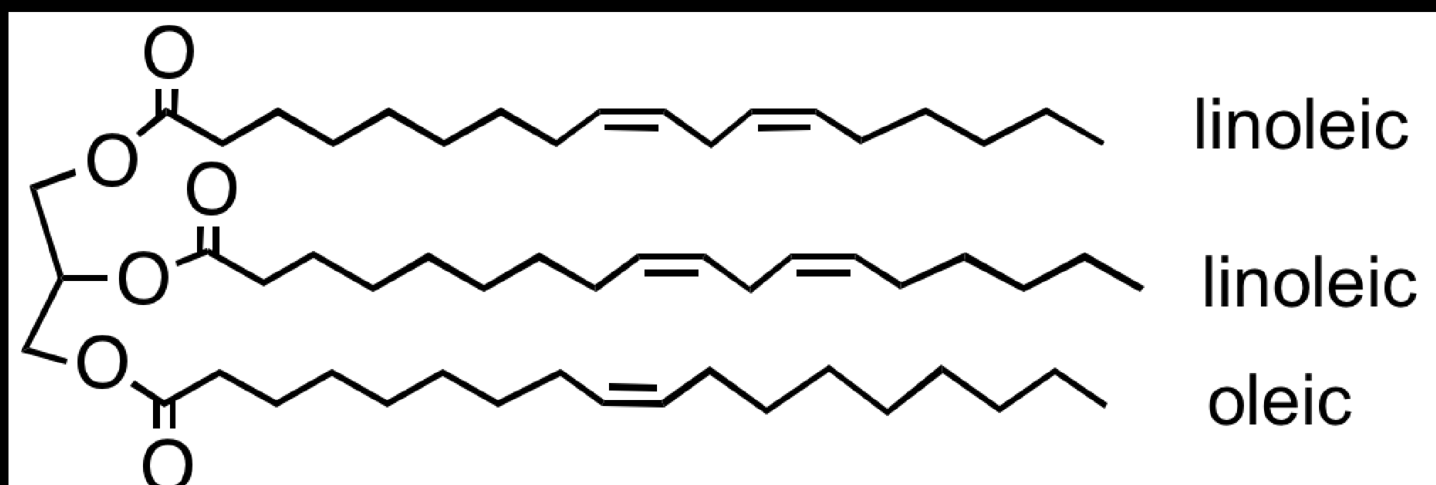
ácido ricinoleico (ácido 12 - hidroxi-9-cis-octadecenóico)

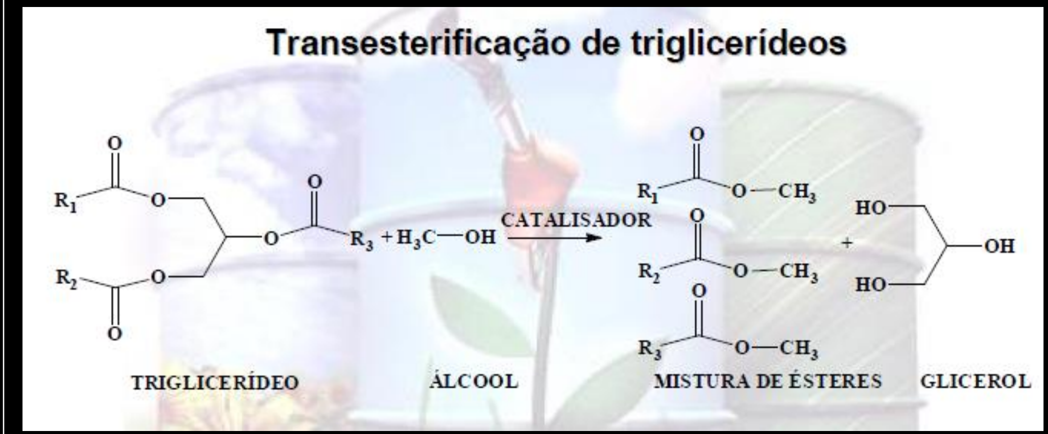



Polar head
Nonpolar tail
cis double bond
cis double bonds
stearic acid
(melting point 71°C)
oleic acid
(melting point 13°C)
linoleic acid
(melting point –5°C)
© 2001 Brooks/Cole - Thomson Learning

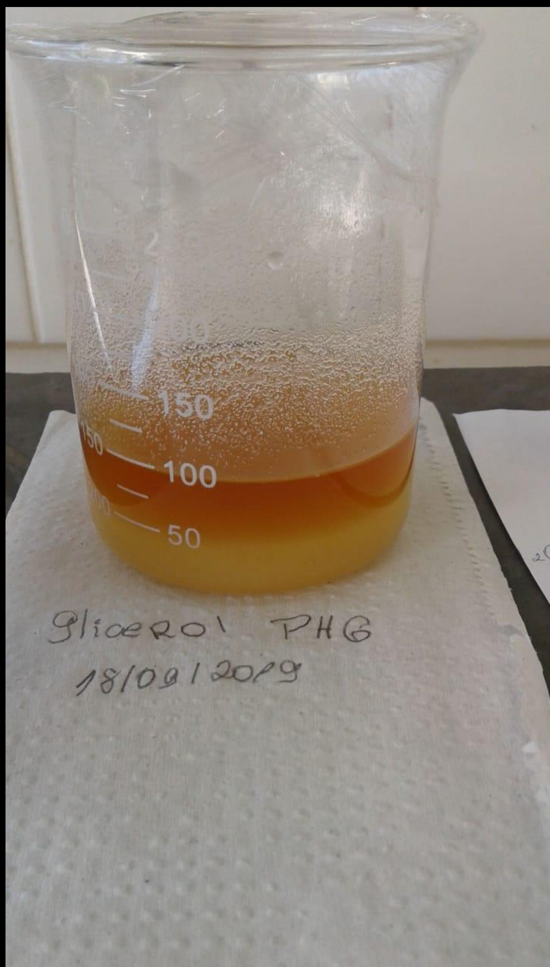
Triglyceride

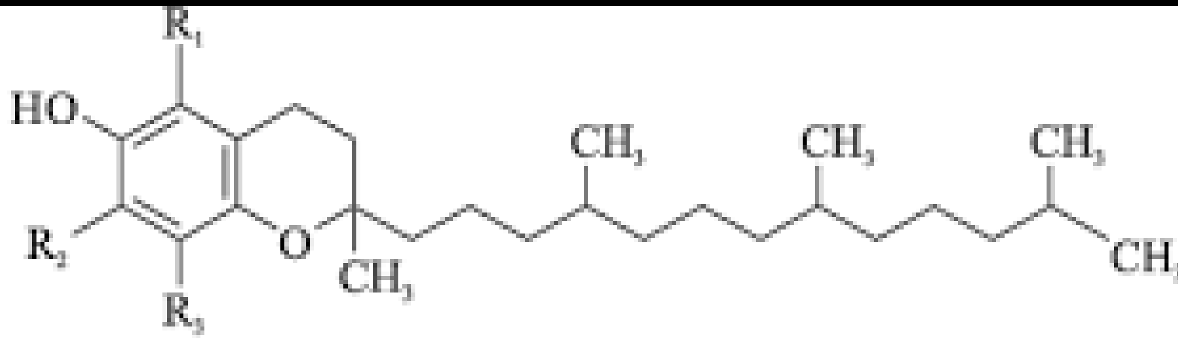





Transesterificação de triglicerídeos
CATALISADOR
TRIGLICERÍDEO
ÁLCOOL
MISTURA DE ÉSTERES
GLICEROL

Pré-tratamento do glicerol


150
100
50
glicerol PHG
18/09/2019

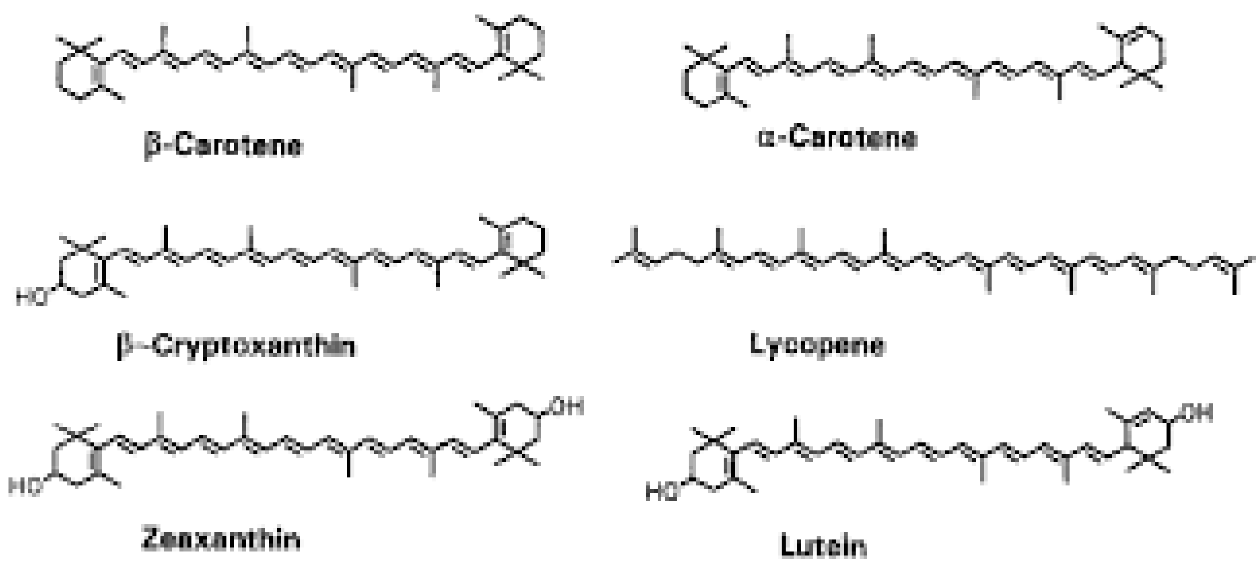


α - tocoferol: $R_1 = R_2 = R_3 = CH_3$

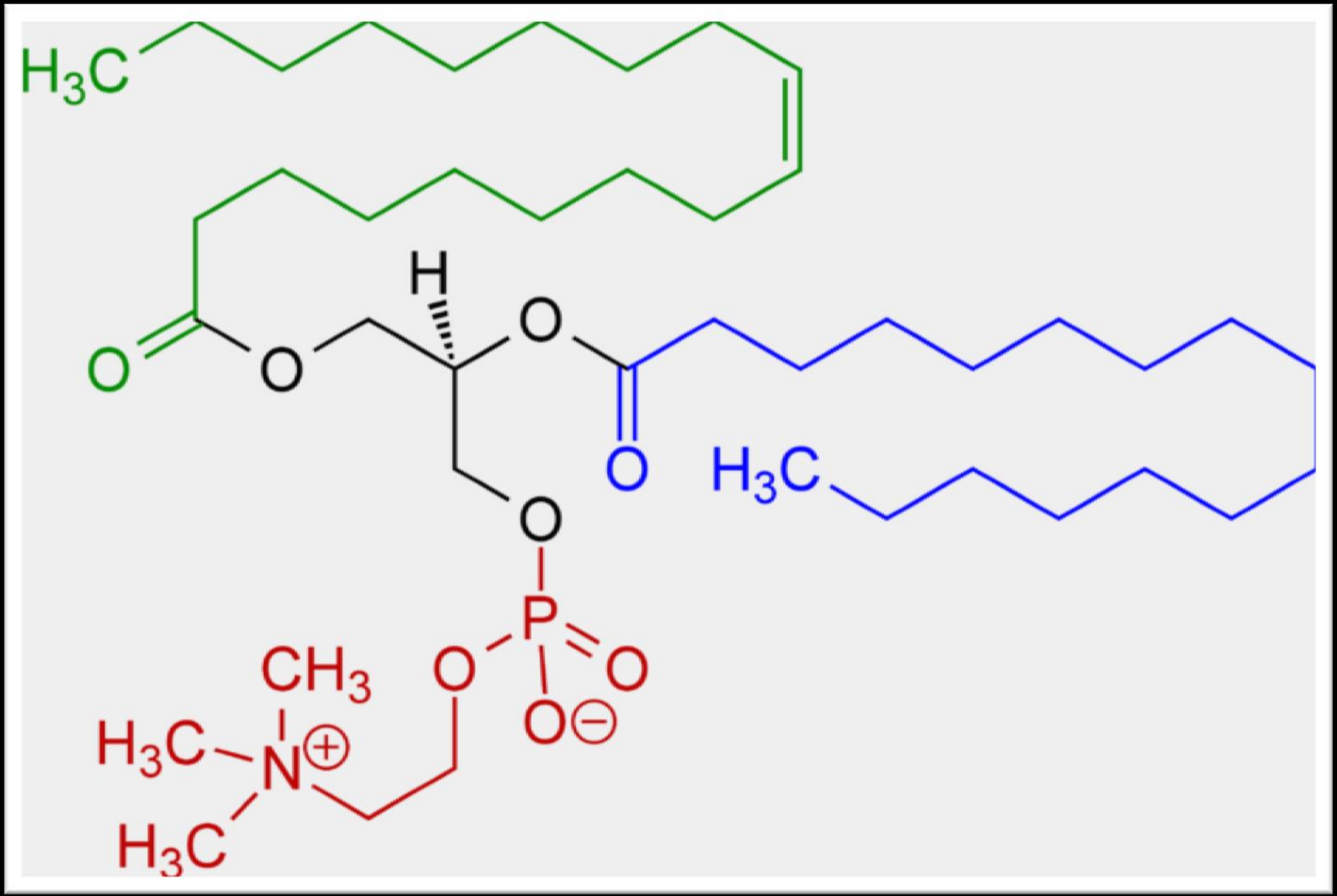
β - tocoferol: $R_1 = R_3 = CH_3$; $R_2 = H$

γ - tocoferol: $R_1 = H$; $R_2 = R_3 = CH_3$

δ - tocoferol: $R_1 = R_2 = H$; $R_3 = CH_3$



Fosfatídeos:
Exemplo: 1-Oleoyl-2-almitoyl-phosphatidylcholine

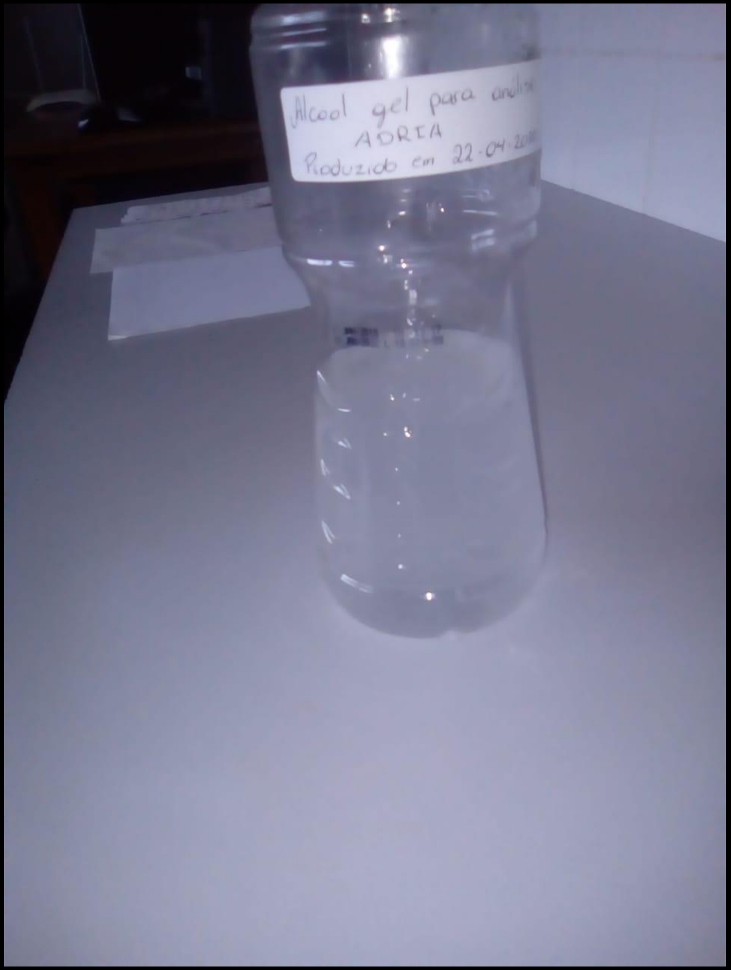


Acrocomia aculeata


125mm
110 V
DELTEX
1000 ml

109


Aplicações


Alcool gel para
ADRIA
Produzido em 22-04-

Cardoso, V. M., Campos, F. F., Santos, A.R.O., Ottoni, M.H.F., Rosa, C.A., Almeida, V.G., Grael, C.F.F. Biotechnological applications of the medicinal plant *Pseudobrickellia brasiliensis* and its isolated endophytic bacteria. *Journal of Applied Microbiology*, 2020, 1-9. DOI: **https://doi.org/10.1111/jam.14666**

Pseudobrickellia brasiliensis
(arnica do mato)

412

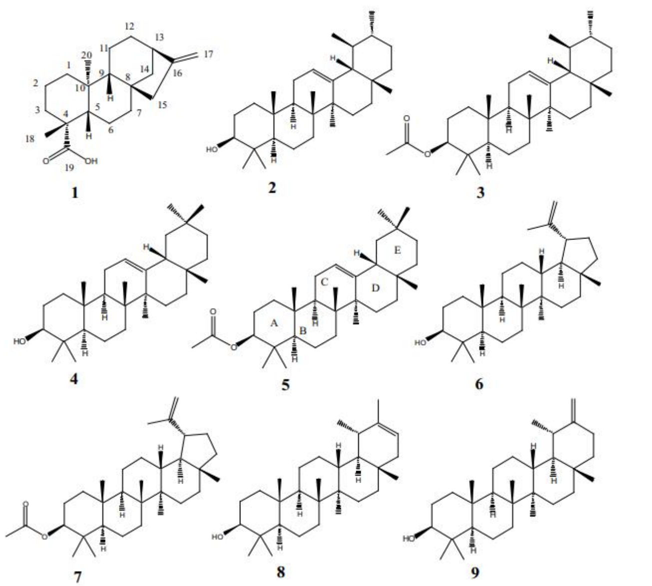


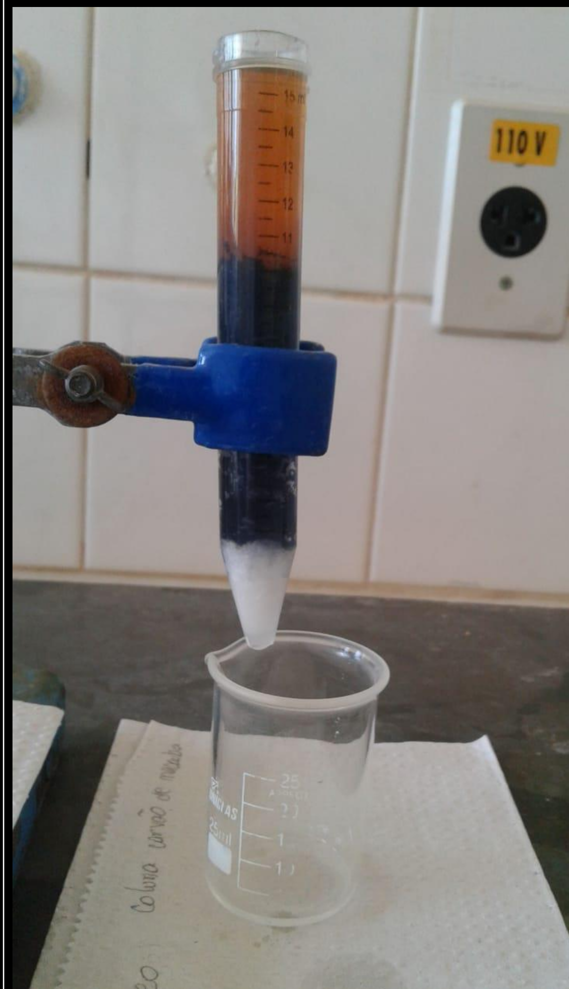
FIGURE 1. Terpenes identified in organic extracts (hexane and ethyl acetate) of the leaves of *P. brasiliensis*. 1: Kaurenoic acid; 2: α-Amyrin; 3: α-Amyrin acetate; 4: β-Amyrin; 5: β-Amyrin acetate; 6: Lupeol; 7: Lupeol acetate; 8: Pseudotaraxasterol; 9: Taraxasterol.

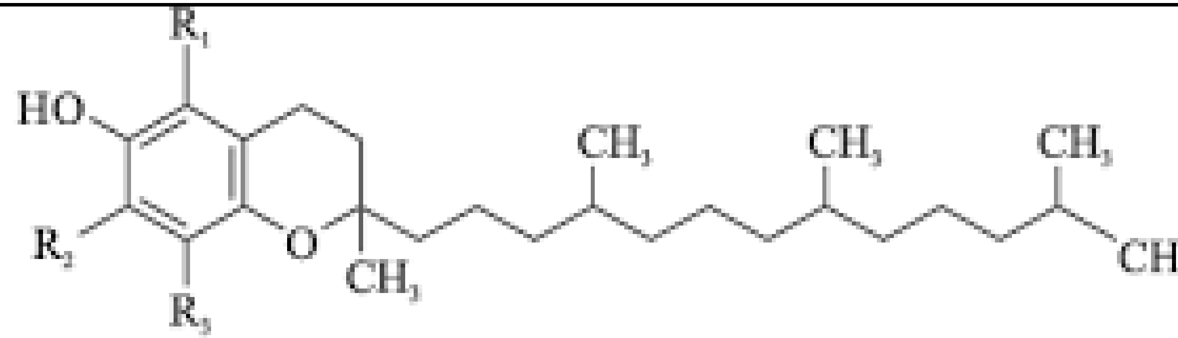
Rev. Bras. Pl. Med., Campinas, v.18, n.2, p.408-414, 2016.

Chemical constituents of Pseudobrickellia brasiliensis leaves(Spreng.) R.M. King & H. Rob. (Asteraceae)

DE AMORIM, M.L.L.1; GODINHO, W.M.1; ARCHANJO, F.C.1; GRAEL, C.F.F.1*
1Universidade Federal dos Vales do Jequitinhonha e Mucuri - Departamento de Farmácia, Faculdade de Ciências Biológicas e da Saúde, Campus JK – Rodovia MGT 367 – Km 583, no 5000, Bairro Alto da Jacuba, 39.100-000, Diamantina – MG, Brasil.

Obtenção de antioxidantes a partir óleos vegetais.





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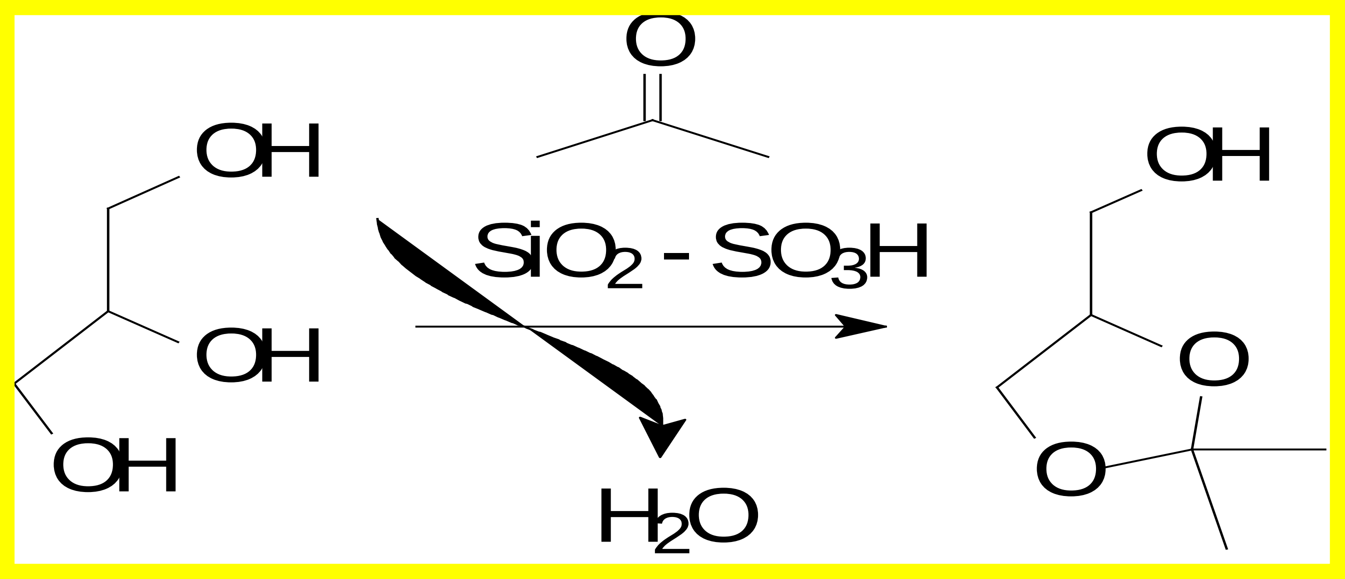
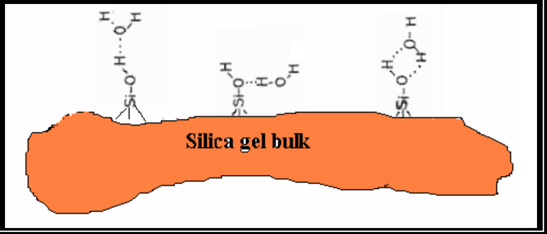
γ - tocoferol: $R_1 = H$; $R_2 = R_3 = CH_3$

δ - tocoferol: $R_1 = R_2 = H$; $R_3 = CH_3$

Uso do SiO_2-SO_3H na síntese de aditivos - solketal





Catalysis Communications 120 (2019) 76–79

Contents lists available at ScienceDirect

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journal homepage: www.elsevier.com/locate/catcom

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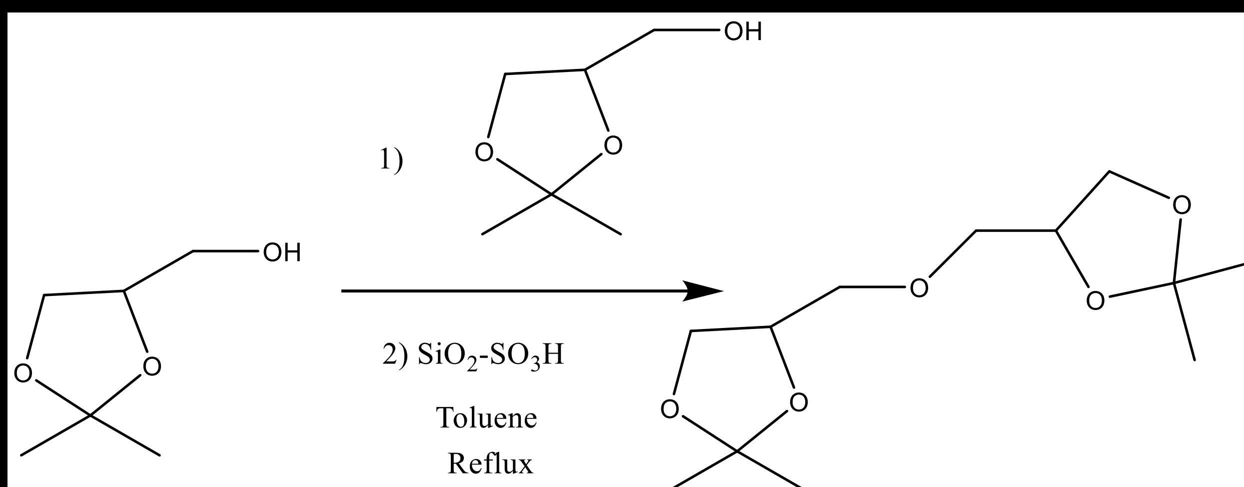
Short communication

Oxygenated biofuels: Synthesis of fatty acid solketal esters with a mixture of sulfonated silica and $(Bu_4N)(BF_4)$ catalyst

Sandro L. Barbosa[a,*], Pamela C. Lima[a], Wallans T.P. dos Santos[a], Stanlei I. Klein[b], Giuliano C. Clososki[c], Franco J. Caires[c]

[a] Department of Pharmacy, Universidade Federal dos Vales do Jequitinhonha e Mucuri-UFVJM, R. da Glória, 187, CEP-39, 100-000 Diamantina, MG, Brazil
[b] Department of General and Inorganic Chemistry, Institute of Chemistry, São Paulo State University-Unesp, R. Prof. Francisco Degni 55, Quitandinha, CEP-14, 800-900 Araraquara, SP, Brazil
[c] Department of Physics and Chemistry, Faculdade de Ciências Farmacêuticas de Ribeirão Preto, São Paulo University-USP, Av. do Café s/n, CEP-14, 040-903 Ribeirão Preto, SP, Brazil

One-way synthesis of disolketal ether



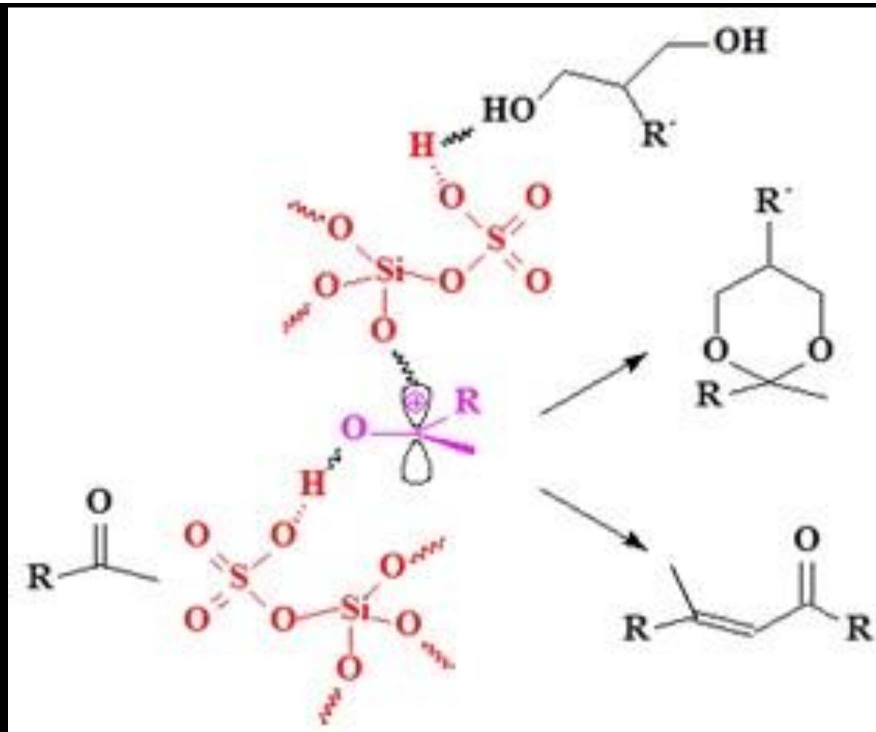
http://dx.doi.org/10.21577/0103-5053.20180039

J. Braz. Chem. Soc., Vol. 00, No. 00, 1-9, 2018.
Printed in Brazil - ©2018 Sociedade Brasileira de Química

Article

Ketalization of Ketones to 1,3-Dioxolanes and Concurring Self-Aldolization Catalyzed by an Amorphous, Hydrophilic SiO_2-SO_3H Catalyst under Microwave Irradiation

Sandro L. Barbosa,[*,a] Myrlene Ottone,[a] Mainara T. de Almeida,[a] Guilherme L. C. Lage,[a] Melina A. R. Almeida,[a] David Lee Nelson,[a] Wallans T. P. dos Santos,[a] Giuliano C. Clososki,[b] Norberto P. Lopes,[b] Stanlei I. Klein[c] and Lucas D. Zanatta[d]*



Catalysis Communications 120 (2019) 76–79

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Short communication

Oxygenated biofuels: Synthesis of fatty acid solketal esters with a mixture of sulfonated silica and $(Bu_4N)(BF_4)$ catalyst

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[a] Department of Pharmacy, Universidade Federal dos Vales do Jequitinhonha e Mucuri-UFVJM, R. da Glória, 187, CEP-39, 100-000 Diamantina, MG, Brazil

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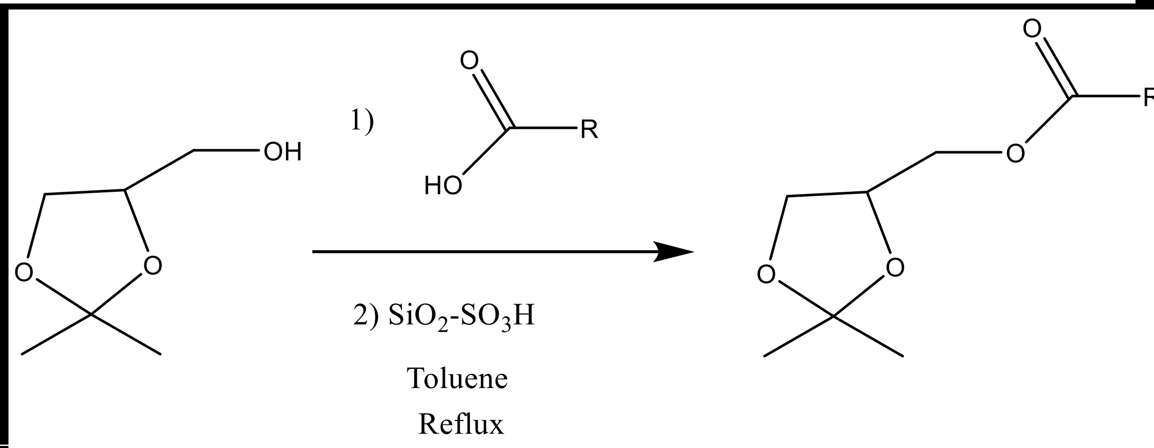
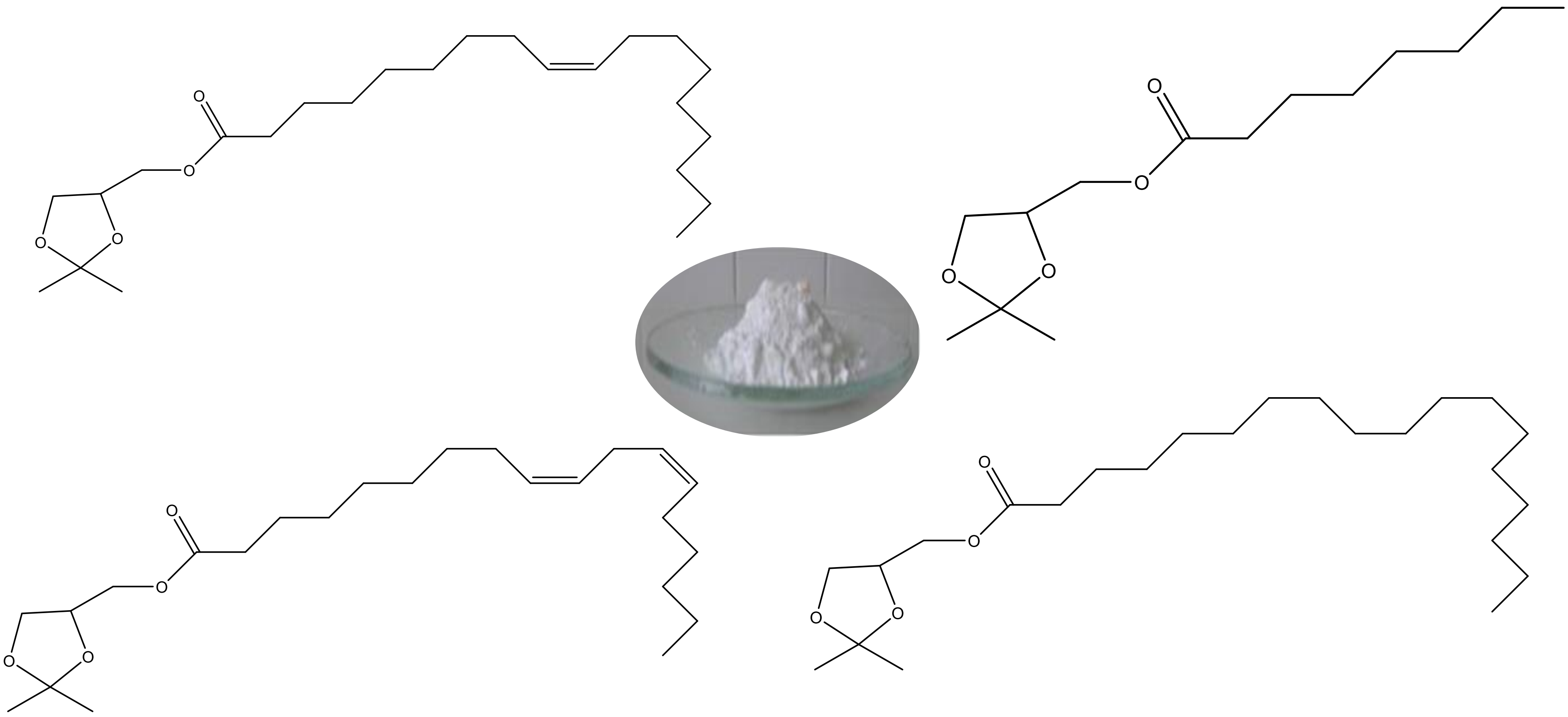
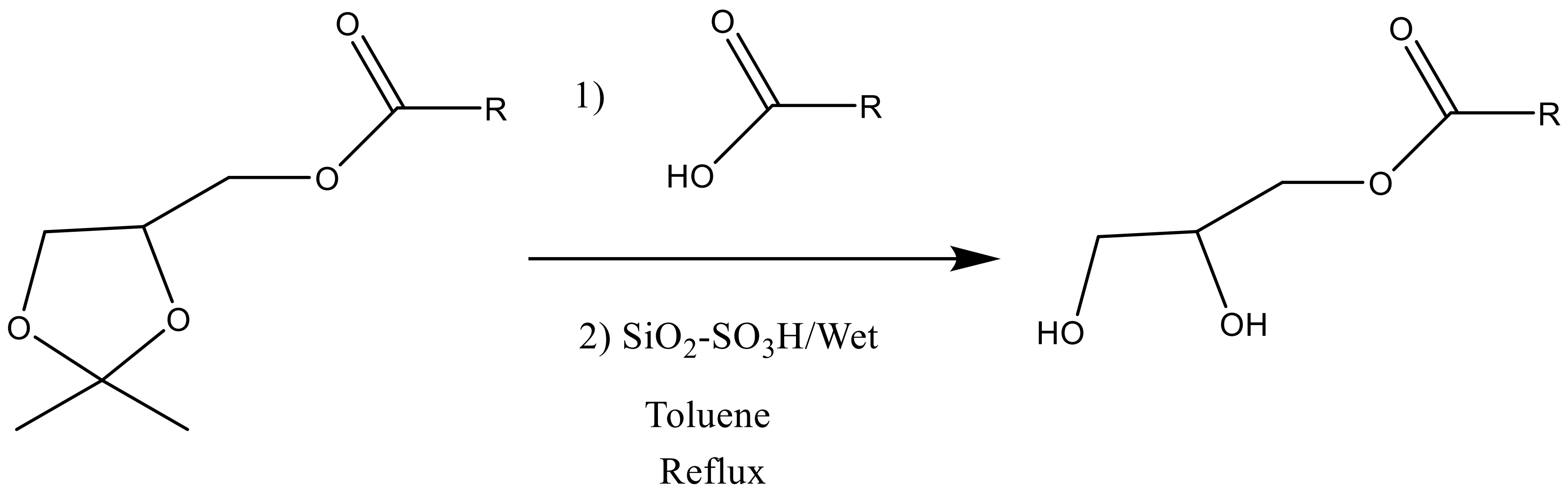
[c] Department of Physics and Chemistry, Faculdade de Ciências Farmacêuticas de Ribeirão Preto, São Paulo University-USP, Av. do Café s/n, CEP-14, 040-903 Ribeirão Preto, SP, Brazil



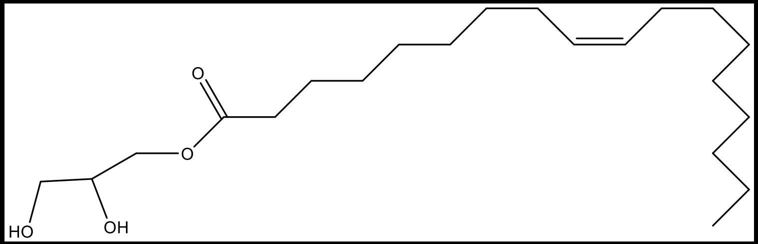
Oxygenated biofuels: Synthesis of fatty acid solketal esters with a mixture of sulfonated silica and $(Bu_4N)(BF_4)$ catalyst

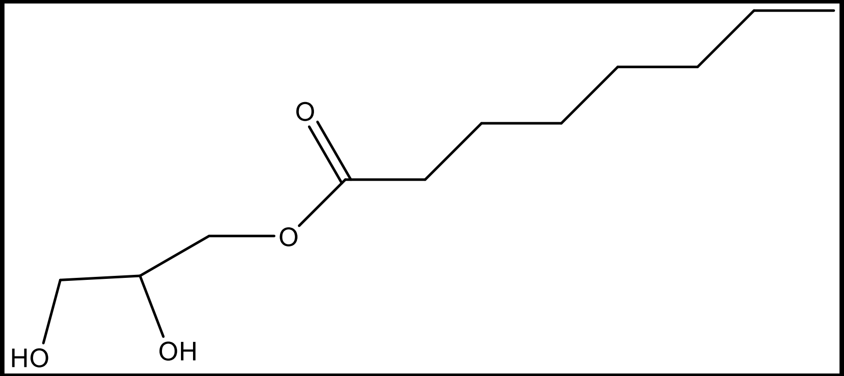


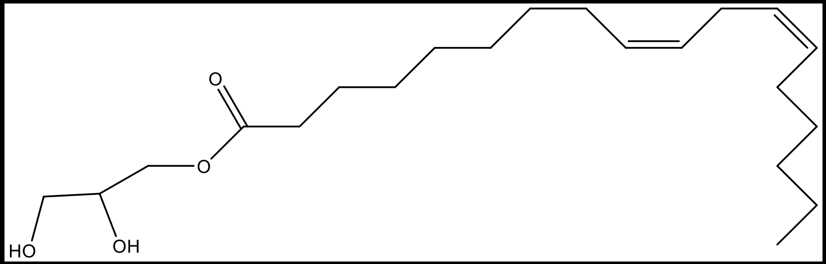
SiO_2-SO_3H wet as heterogeneous catalyst in the synthesis of monoglycerides.

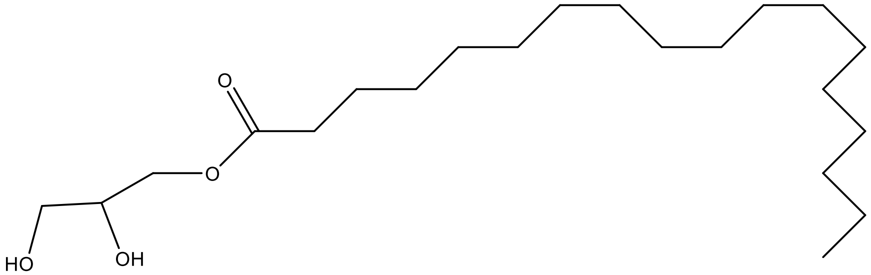


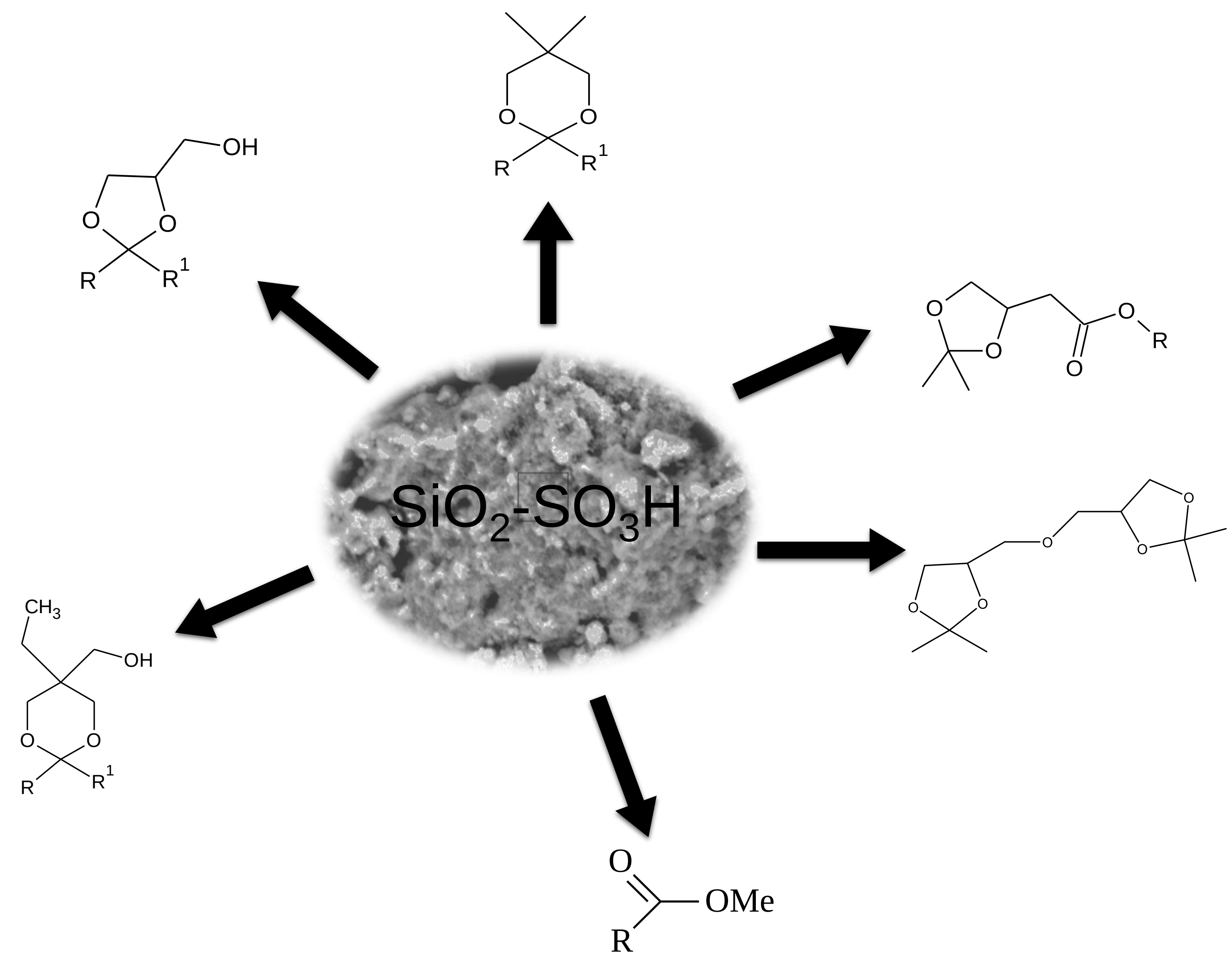
SiO_2-SO_3H úmido como catalisador na sintese de monoglicerídeos.











SiO2-SO3H
OH
O
O
R
R1
OMe
CH3

All Authors

Sandro L. Barbosa – Professor, Federal University of Jequitinhonha and Mucuri.

Camila D. Lima –DSc, UFVJM.

Gelson Cerqueira Junior – DSc, UFVJM

Milton de Souza Freitas – DSc, UFVJM.

Pamela Cristina Lima – DSc, UFVJM

Adeline Cristina Pereira Rocha – DSc, UFVJM

Melina Alves Rodrigues Almeida – undergraduate, UFVJM

Stanlei I. Klein – Professor, University of São Paulo State (Unesp).

Giuliano Cesar Clososki – Professor, University of São Paulo (USP)

Thanks!