ACCOMPANYING MATERIAL 5 COMPOUNDS IN FRESH AND ALTERED PINACEAE RESIN

Compound	Notes	References
Abietic acid	Dominant in fresh resin	(Azemard et al., 2016; Beltran et al., 2016; Colombini et al., 2005; Egenberg et al., 2002/1; Enoki, 1976; Hjulström et al., 2006/2; Jerković et al., 2011; Mills and White, 1977; Pollard and Heron, 2008; Proefke and Rinehart, 1992; Regert, 2004; Regert et al., 2005; Scalarone et al., 2002/9)
Neoabietic acid	Fresh resin	(Colombini et al., 2005; Enoki, 1976; Keeling and Bohlmann, 2006)
Pimaric acid	Fresh resin	(Azemard et al., 2016; Enoki, 1976; Regert, 2004; Regert et al., 2005)
Isopimaric acid	Fresh resin	(Azemard et al., 2016; Mills and White, 1977; Regert, 2004; Regert et al., 2005)
∆8-isopimaric acid	Fresh resin	(Mills and White, 1977; Regert, 2004)
Palustric acid	Fresh resin	(Colombini et al., 2005; Enoki, 1976; Helwig et al., 2008; Keeling and Bohlmann, 2006; Mills and White, 1977; Scalarone et al., 2002/9, p. 349)
Sandaracopimaric acid	Fresh resin	(Helwig et al., 2008; Scalarone et al., 2002/9)
Levopimaric acid	Fresh resin	(Colombini et al., 2005; Enoki, 1976; Keeling and Bohlmann, 2006; Scalarone et al., 2002/9, p. 349; Steigenberger, 2013; van den Berg et al., 2000)
Dehydroabietic acid	Aged resin. Most abundant compound in aged *Pinus* samples, and occurs in fresh resins as a minor trace component. DHA is the most stable component in hardened Pinaceae resins. DHA is formed	(Andreotti et al., 2006; Azemard et al., 2016; Baumer et al., 2009; Beltran et al., 2016; Burger et al., 2013; Cameron et al., 2017/6; Chiavari et al., 2002; Colombini et al., 2005;

	by the oxidation of abietic acid.	Čukovska et al., 2012; Egenberg et al., 2002/1; Enoki, 1976; Fox et al., 1995; Giachi et al., 2013; Helwig et al., 2008; Hjulström et al., 2006/2; Mills and White, 1977, 2012; Pastorova et al., 1997/8; Pollard and Heron, 2008; Proefke and Rinehart, 1992; Rageot et al., 2016; Regert and Rolando, 2002; Ribechini et al., 2009, 2008; Richardin, 1996; Rontani et al., 2015; Scalarone and Chiantore, 2009)
∆6-dehydroabietic acid	Alteration product of DHA	(Proefke and Rinehart, 1992)
Dehydro-7-dehydroabietic acid	Marker for altered pine resin	(Azemard et al., 2016; Pérez-Arantegui et al., 2009; Regert, 2004; Regert et al., 2005; Ribechini et al., 2009)
(Dehydro-dehydroabietic acid, Di-dehydroabietic acid)		(Andreotti et al., 2006; Cameron et al., 2017/6; Čukovska et al., 2012; Ribechini et al., 2008)
12-hydroxy-dehydroabietic acid	From solid pine resin (colophony)	(Azemard et al., 2016)
7,15-dihydroxy-dehydroabietic acid	Natural degradation product of aged pine resin	(Azemard et al., 2016; van den Berg, 2003)
7α,15-dihydroxy-dehydroabietic acid and 7β,15-dihydroxy-dehydroabietic acid	Aged pine resin	(Azemard et al., 2016)
7α-hydroxy,18-nordehydroabietic acid and 7β-hydroxy,18-nordehydroabietic acid	Proposed degradation products of aged pine resin	(Azemard et al., 2016)
7-oxo-dehydroabietic acid	Aged resin, altered pine resin. Oxidation product of abietic acid. Highly oxidised product of dehydroabietic acid. Product of DHA exposure to air and light (or heat)	(Andreotti et al., 2006; Baumer et al., 2009; Beltran et al., 2016; Cameron et al., 2017/6; Fox et al., 1995; Giachi et al., 2013; Mills and White, 1977; Proefke and Rinehart, 1992; Rageot et al., 2016; Regert, 2004; Regert et al., 2005; Regert and Rolando, 2002; Ribechini et al., 2009, 2008; Scalarone and Chiantore, 2009)

7-oxo-dehydro-dehydroabietic acid	Product of DHA exposure to air and light (or heat)	(Baumer et al., 2009; Čukovska et al., 2012)
7-hydroxy-dehydroabietic acid	Aged resin	(Proefke and Rinehart, 1992; Rageot et al., 2016; Ribechini et al., 2008; Scalarone and Chiantore, 2009; Steigenberger, 2013)
7α-hydroxy-dehydroabietic acid and 7β-hydroxy-dehydroabietic acid	Oxidation products of DHA	(Azemard et al., 2016; Rontani et al., 2015)
15-hydroxy-dehydroabietic acid	Aged resin. Highly oxidised product of DHA	(Azemard et al., 2016; Beltran et al., 2016; Modugno and Ribechini, 2009; Pastorova et al., 1997/8; Ribechini et al., 2009; Scalarone and Chiantore, 2009; van den Berg, 2003)
3-hydroxy-dehydroabietic acid	Oxidation product of DHA	(Pastorova et al., 1997/8; 2000, 1998)
15-hydroxy-7-oxo-dehydroabietic acid (7-oxo-15-hydroxy-dehydroabietic acid)	Aged conifer resin. The most highly oxidised product of dehydroabietic acid known to date	(Azemard et al., 2016; Beltran et al., 2016; Helwig et al., 2008; Modugno and Ribechini, 2009; Pastorova et al., 1997/8; Proefke and Rinehart, 1992; Rageot et al., 2016; Ribechini et al., 2009; Scalarone and Chiantore, 2009; van den Berg, 2003; 2000, 1998)
7-hydroxy-15-hydroxy-dehydroabietic acid	Attributable to Pinaceae resin	(Ribechini et al., 2008)
Retene	Pinaceae resin and wood alteration products from heating strongly	(Carpy and Marchand-Geneste, 2003; Hjulström et al., 2006/2; Modugno and Ribechini, 2009; Pollard and Heron, 2008; Pozhidaev et al., 2016; Ribechini et al., 2009)
Tetrahydroretene	Pinaceae resin and wood alteration products from heating	(Modugno and Ribechini, 2009; Pérez-Arantegui et al., 2009)
Alkyl guaiacyl dehydroabietates	Markers for wood tar from Pinaceae, cannot be formed via diagenetic or thermal alteration of resin.	(Bailly et al., 2016)