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Synthesis Arylselanyl Acrylates promoted by electrosynthesis

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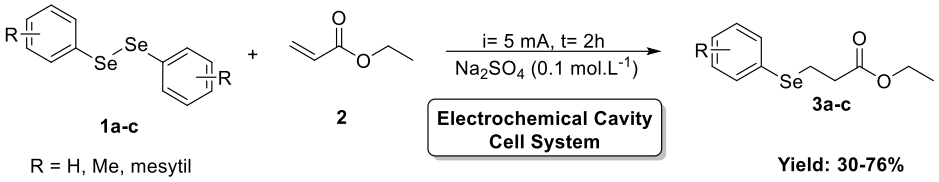
ABSTRACT

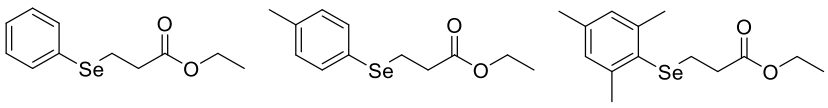
Organic electrosynthesis (OES) is a simple methodology that can waive use of some auxiliary agents, what makes it potentially less hazardous for the environment and the operator and can be applied to the preparation of several compounds including organic[1,2] and inorganic[3] as well as pharmaceutical compounds.[4] Besides, electrochemistry provides a green and efficient method of synthesis,[5] particularly due to good yields, current efficiency, and control of the process.[6] A preliminary study was conducted to establish the best condition reactions, using diphenyl diselenide **1a**, ethyl acrylate **2**, and graphite powder were mixed and then transferred to the macroelectrode cavity. It was evaluated the influence of stoichiometry of diphenyl diselenide **1a** and **2**, graphite powder amount, type of electrolyte solution and current intensity. This greener approach involves mild reaction conditions, short reaction time, without organic solvent use, under open-to air conditions and provides the arylselanyl acrylates products in good yields (Scheme 1).

Scheme 1. Study of electrosynthesis of arylselanyl acrylates in cavity cell system.



Entry	1a (mmol)	2 (mmol)	graphite (g)	Solvent/Electrolyte (0.1 mol.L^{-1})	Current (mA)	time (h)	Yield (%)
1	0,14	0,25	1,2	H_2O/Na_2SO_4	10	1	21
2	0,14	0,25	1,2	H_2O/Na_2SO_4	20	0,8	28
3	0,14	0,25	0,6	H_2O/Na_2SO_4	5	1	57
4	0,14	0,25	0,6	H_2O/Na_2SO_4	10	1	48
5	0,14	0,25	0,6	$CH_3CN/LiClO_4$	10	1	46
6	0,14	0,25	0,6	$DMF/TBAClO_4$	10	1	47
7	0,5	1	0,3	H_2O/Na_2SO_4	10	1	68
8	0,25	0,5	0,6	H_2O/Na_2SO_4	10	1	58
9	0,25	0,5	0,6	H_2O/Na_2SO_4	20	0,5	38
10	0,25	0,5	0,6	H_2O/Na_2SO_4	5	2	76
11	0,5	1	0,3	H_2O/Na_2SO_4	5	2	70

Yields:



3a: 76% **3b**: 60% **3c**: 30%

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