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DIRECT SELENIZATION OF THE C(sp^2)-H BOND OF QUINOLINE VIA ELECTROSYNTHESIS

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ABSTRACT

Quinoline-derived compounds are well-known for their diverse biological activities, acting as pharmacological agents with antibacterial, antiviral, anti-inflammatory, and antioxidant properties[1]. The increasing number of publications on electrochemical synthesis highlights the importance of research focused on synthesizing compounds using this environmentally friendly methodology, offering a more sustainable alternative compared to traditional methods[2]. This work describes the electrosynthesis of quinoline-derived organoselenium compounds, aiming to explore their potential biological activity. Initial studies directly employing quinoline yielded unsatisfactory results due to its low reactivity. Therefore, experiments were conducted using quinoline *N*-oxide and diphenyl diselenide as a selenium source. This approach resulted in conversions ranging from 69% to 98%, as determined by ^{1}H-NMR analysis across various reaction times (Table 1). The optimized reaction conditions include a reaction temperature of 70 °C, $TBABF_4$ as the supporting electrolyte, acetonitrile as the solvent, platinum electrodes for both the cathode and anode, and a current application of 24 mA.

Figure 1 – Reaction scheme

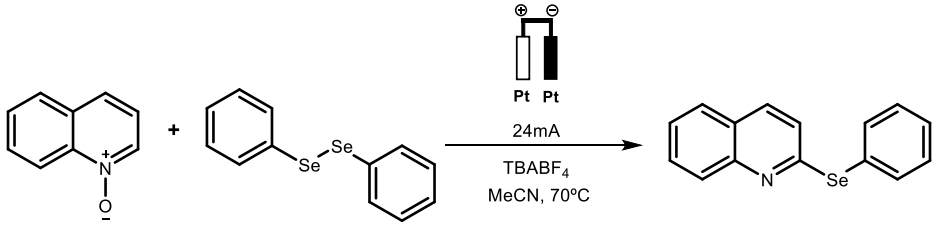

Table 1 – Conversion to product analyzed by ^{1}H-NMR

Time	Conversion (%)
6 hours	69%
8 hours	98%
11 hours	98%
24 hours	96%

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