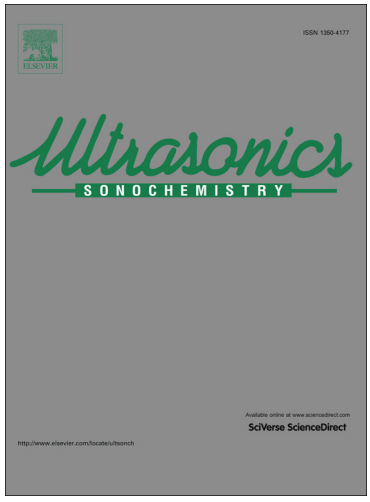

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Ultrasound-enhanced Ag-catalyzed decarboxylative coupling between α-keto acids and disulfides for the synthesis of thioesters

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Abstract: Herein, we described the ultrasound-assisted synthesis of thioesters *via* the Ag-catalyzed radical oxidative decarboxylation of α-keto acids, in the presence of disulfides. This protocol takes advantage of the sonication to prepare the title compounds in moderate to very good yields, in only 20 min of reaction. The positive effect of ultrasonic irradiation is attributed to both, the high mass transfer efficiency and to the induced radical formation in the reaction medium.

Keywords**:** *sonochemistry, thioester, glyoxylic acids, green chemistry.*

1 Introduction

Pyruvate is an α-keto acid derivative that plays a crucial role as precursor of cell supplying energy processes in living organisms, such as, animals, plants and bacteria [1]. The first synthesis of α-keto acid was described by Berzelius in 1835, who have prepared pyruvic acid, the main pyruvate precursor [2]. From the development of general synthetic methods to prepare this class of compounds [3], their chemical properties and applications started to be investigated.

Among the synthetic applications of α-keto acids and derivatives, Fontana and co-workers have introduced in 1991 their use as an acyl source [4]. Authors have described the decarboxylative acylation of heteroaromatic systems promoted by Ag(I)/$S_2O_8^{-2}$, *via* the formation of an acyl radical intermediate. From this seminal study, several methodologies have been

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