

CATALYSIS-FREE MICROWAVE-ASSISTED SYNTHESIS OF BISCOUMARINS  
WITH CHROMONE GROUP BY A MULTICOMPONENT PROCESSE. Ximena Aguilera Palacios <sup>1</sup>, Gustavo A. Pasquale <sup>2</sup>, Valeria Palermo <sup>1,\*</sup>, Marcelo C. Murguía <sup>3</sup>, Á. Gabriel Sathicq <sup>1</sup>  
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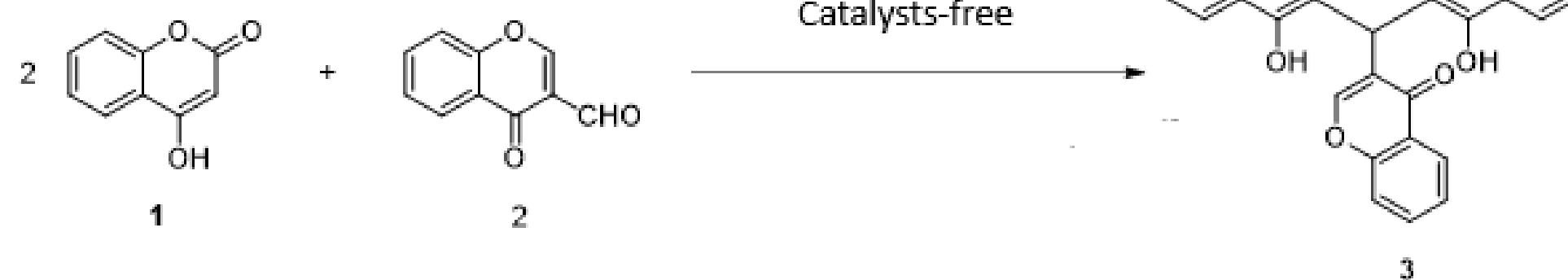
**Biscoumarin** molecules -which have been shown to be active as anticoagulants, antiseptics, and urease inhibitors- were obtained by **multicomponent reaction**, without catalysts, nontoxic solvent, under thermal heating or **microwave irradiation**.

Multicomponent reactions are convergent processes that combine three or more reactants in a single operation to form a single product. The main characteristics is the **high atom economy** and **lack of generation of harmless byproducts**.

MW: reduce reaction times

The effect of the solvent, temperature, and reaction time were evaluated.

## Reaction test



## Optimal reaction conditions:

Conventional heating: 4-hydroxycoumarin (1 mmol), 3-formylchromone (0.5 mmol), 1-propanol (3 mL), stir, 4 h, 100 °C

Microwave irradiation: 4-hydroxycoumarin (1 mmol), 3-formylchromone (0.5 mmol), 1-propanol (3 mL), stir, 1 h, 130 °C

Formylchromone	Biscoumarin	Conventional heating 4h Yield (%)	Microwave radiation 1h Yield (%)
		86	74
		67	59
		75	72
		58	56
		70	68
		68	67

## CONCLUSIONS

Sustainable methodology was implemented to obtain biscoumarins derived from 3-formylchromones with 4-hydroxycoumarin: were applied:

- ✓ without catalysts,
- ✓ with nontoxic solvents,
- ✓ using microwave radiation as an alternative heat source.

The compounds are obtained practically pure by simple precipitation of the reaction mixture and filtration.

Good yields and selectivity, which in most cases was greater than 65%, both with conventional thermal heating and microwave radiation were achieved.

Six biscoumarin molecules were obtained, five of which had not been previously reported in the literature, with yields that, in most cases, exceeded 70%.