Platelet antiaggregant properties of ethyl caffeate isolated from *Solanum tuberosum* periderm

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Introduction

Antiplatelet therapy plays a key role in the treatment of artery thrombotic disorders, including acute coronary syndrome. Previous work showed that *Solanum tuberosum* periderm extract elicited antihypertensive effect in rats (1) and antiplatelet properties in human plasma (2). Since ethyl caffeate is among the metabolites isolated from this species (3), this study assessed the effect that this compound exerts in human platelet aggregation.

Methods

Ethyl caffeate was obtained from phytochemical fractioning starting from the ethanolic extract of *S. tuberosum* periderm (N.V. “papa”). Ten fractions of increasing polarity (coded from SP1 to SP10) were obtained and assessed. After NMR analysis ethyl caffeate identity, isolated from SP-2 fraction, was confirmed (3), (Figure 1). For screening purpose of antiplatelet activity, ethyl caffeate (100 μg/mL) was compared with acetylsalicylic acid (100 μg/mL) and DMSO (0.1%) as control, applying Born methodology (4) in human platelets stimulated with collagen (COLL, 10 μM), arachidonic acid (AA, 150 μg/mL), epinephrine (EPI, 300 μM) and adenosyn diphosphate (ADP, 10 μM). Then, concentration - response of ethyl caffeate (10-100 μg/mL, 48-480 μM) were assayed in order to get the inhibitory concentration 50 (IC50). Results are expressed as mean ± standard error of the mean (SEM). ANOVA test was applied to identify significant differences (p<0.05). Concentration-response curves were subjected to sigmoidal regression to obtain IC50 and fiducial limits. Excel and GraphPad Prism (V 5.0) software were used for data analysis.

Results

Ethyl caffeate (100 μg/mL, 0.48 mM) and ASA (100 μg/mL, 0.56 mM) significantly inhibited platelet aggregation induced by COLL (10 μM), AA (150 μg/mL), EPI (300 μM) and ADP (10 μM), (Fig. 2). Concentration – response of ethyl caffeate against all of those platelet stimulants gave similar IC50 values (50-59 μg/mL, 0.24-0.28 mM), (Fig. 3).

Conclusions

Ethyl caffeate, isolated from *S. tuberosum* periderm extract, displays antiaggregant platelet properties. Its mechanisms of action would be placed at intracellular level, result in accordance with described by other authors (5). This results gives support to antiplatelet properties of *S. tuberosum* periderm.

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References