



## Antiplatelet Activity of Metabolites Isolated from *Solanum tuberosum*

Diana M. BUITRAGO <sup>1</sup>, Pilar PUEBLA <sup>2</sup> & Mario F. GUERRERO <sup>1</sup> \*

<sup>1</sup> Department of Pharmacy, Faculty of Sciences, "Universidad Nacional de Colombia",  
111321, Bogotá D.C., Colombia

<sup>2</sup> Department of Pharmaceutical Sciences, Faculty of Pharmacy,  
Universidad de Salamanca, 37007, Salamanca, Spain

**SUMMARY.** The aim of this study was to identify the main metabolites responsible for the platelet anti-aggregant activity described previously in whole ethanol extracts of *Solanum tuberosum* periderm. Extract fractionation led to the isolation and identification of the glycoalkaloids solanine and chaconine, and the polyphenols caffeic and chlorogenic acids. The activities of these metabolites were compared with the "sabanera" and "pastusa" varieties of the whole ethanol extract (10 µg/mL). Human platelets were stimulated with adenosine diphosphate (ADP; 10 µM), collagen (10 µg/mL), or araquidonic acid (AA; 150 µg/mL). Chlorogenic acid displayed greater antiplatelet activity against ADP, whereas caffeic acid exhibited greater antiplatelet activity against AA. Solanine and chaconine were inactive. According to these results, the antiplatelet activity of *S. tuberosum* is due, at least in part, to their caffeic and chlorogenic acid content. This property could be beneficial in the prevention or treatment of atherothrombotic disorders such as coronary artery disease.

**RESUMEN.** El objetivo de este estudio fue identificar los principales metabolitos responsables de la actividad antiagregante plaquetaria descrita anteriormente en extractos de etanol completos de peridermis de *Solanum tuberosum*. El fraccionamiento del extracto condujo al aislamiento e identificación de los glicoalcaloides solanina y chaconina, y de los polifenoles ácidos cafeico y clorogénico. Las actividades de estos metabolitos se compararon con las variedades "sabanera" y "pastusa" del extracto etanólico completo (10 µg/mL). Las plaquetas humanas se estimularon con difosfato de adenosina (ADP; 10 µM), colágeno (10 µg/mL) o ácido araquidónico (AA; 150 µg/mL). El ácido clorogénico mostró una mayor actividad antiplaquetaria contra el ADP, mientras que el ácido cafeico mostró una mayor actividad antiplaquetaria contra el AA. La solanina y la chaconina resultaron inactivas. De acuerdo con estos resultados, la actividad antiplaquetaria de *S. tuberosum* se debe, al menos en parte, a su contenido de ácido cafeico y clorogénico. Esta propiedad podría ser beneficiosa en la prevención o el tratamiento de trastornos aterotrombóticos como la enfermedad de la arteria coronaria.

**KEY WORDS:** antiplatelet, chlorogenic acid, caffeic acid, solanine, *Solanum tuberosum*.

\* Author to whom correspondence should be addressed. E-mail: mfguerrero@unal.edu.co