

# Chemical Composition and Biological Activity of *Paris quadrifolia* L.

Kristina Jenett-Siems<sup>a</sup>, Nadin Krause<sup>a</sup>, Karsten Siems<sup>b</sup>, Sven Jakupovic<sup>b</sup>,  
Gerd Wallukat<sup>c</sup>, and Matthias F. Melzig<sup>a,\*</sup>

<sup>a</sup> Institut für Pharmazie (Pharmazeutische Biologie), Freie Universität Berlin,  
Königin-Luise-Str. 2–4, D-14195 Berlin, Germany. Fax: +493083851461.  
E-mail: melzig@zedat.fu-berlin.de

<sup>b</sup> AnalytiCon Discovery GmbH, Hermannswerder Haus 17, D-14473 Potsdam, Germany

<sup>c</sup> Max Delbrück Center for Molecular Medicine, Robert Rössle Str. 10,  
D-13125 Berlin, Germany

\* Author for correspondence and reprint requests

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A study of the components of *Paris quadrifolia* was undertaken to identify compounds with potential influence on cardiac cells, since previous reports suggested a cardiotoxic risk of this plant. Compounds isolated and identified included one new steroidal saponin, (23*S*,24*S*)-spirosta-5,25(27)-diene-1•,3•,21,23,24-pentol-1-*O*-•-D-apiofuranosyl-(1↓3)- $\beta$ -D-rhamnopyranosyl-(1↓2)-[•-D-xylopyranosyl-(1↓3)]-•-D-glucopyranoside 21-*O*-•-D-apiofuranoside 24-*O*-•-D-fucopyranoside (**1**), demonstrating quite unusual structural features, as well as the known compounds 26-*O*-•-D-glucopyranosyl-(25*R*)-5-en-furost-3•,17 $\beta$ ,22 $\beta$ ,26-tetraol-3-*O*- $\beta$ -D-rhamnopyranosyl-(1↓4)- $\beta$ -D-rhamnopyranosyl-(1↓4)-[ $\beta$ -D-rhamnopyranosyl-(1↓2)]-•-D-glucopyranoside (**2**), pennogenin 3-*O*- $\beta$ -D-rhamnopyranosyl-(1↓4)- $\beta$ -D-rhamnopyranosyl-(1↓4)-[ $\beta$ -D-rhamnopyranosyl-(1↓2)]-•-D-glucopyranoside (**3**), 7-*O*-•-D-glucopyranosyl-kaempferol-3-*O*-•-D-glucopyranosyl-(1↓2)-•-D-galactopyranoside (**4**), kaempferol-3-*O*-•-D-glucopyranosyl-(1↓2)-•-D-galactopyranoside (**5**), 5-hydroxyecdysterone (**6**), and 20-hydroxyecdysone (**7**). The pennogenin derivative **3** showed strong cardiotoxic effects in an *in vitro* cellular model system, whereas the respective furostanol derivative **2** was inactive.

**Key words:** *Paris quadrifolia*, Trilliaceae, Steroidal Saponins, Cardiotoxicity