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## CYTOMETRIC MONITORING OF PHYTOESTROGENS EFFECTS ON PLATELET ACTIVITY

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Introduction: Membrane platelet receptor GpIIb-IIIa participates in platelet aggregation (PA) as fibrinogen's receptor. Administration of phytoestrogens (PO) to platelets inhibits PA.

Purpose: To investigate the possible inhibition of a) PA and b) the operation of GpIIb-IIIa *ex vivo*, through administration of PO.

Materials and Methods: 28 healthy volunteers participated in the study as blood donors. The PO 1) apigenine (4',5,7-trihydroxyflavone), 2)  $\beta$ -naphthol ( $\beta$ -hydroxynaphthalene), 3) quercetin (3,3',4',5,6,7-hexahydroxyflavone), 4) resveratrol (3,4',5-trihydroxy-stilbene-3- $\beta$ -D-glucoside), 5) thymol (3-hydroxy-p-cymene), 6) genistein (4,5,7-trihydroxy-isoflavone) and 7) origan oil were administered in their rich platelet plasma (PRP) at a concentration of  $3 \times 10^{-3}$  M per substance. The GpIIb-IIIa receptors, were measured by ADIAflo Platelet Occupancy kit. American Diagnostica Inc. and the flow cytometer Epics XL-MCL-Beckman Coulter. PA trials to the PRP were implemented with epinephrine (EPN), thrombin (THR), arachidonic acid (AA), PAF and ADP as stimulants. Same trials took place after administration of the under study PO in the PRP at a  $3 \times 10^{-3}$  M concentration per substance. PA was calculated in a PICA Chronolog Co aggregometer.

Results: After the administration of the PO apigenine,  $\beta$ -naphthole, quercetin, resveratrol, thymol, genistein and origan oil: a) the operation of the receptor GpIIb-IIIa decreased by 91, 98.1, 93, 91, 92, 89 and 99.5 % respectively, b) each substance studied caused a 100% inhibition of PA.

Conclusions: Phytoestrogens contained in many plants and fruits and known to be free oxygen radicals scavengers, are possible to act at the level of platelet receptors GpIIb-IIIa inhibiting their function and in this way averting the configuration of platelet clotting. Based on these facts, they could be used complimentary, to prevent thromboembolic diseases.