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GUARANA (*Paullinia cupana*) INHIBITS AGGREGATION IN WHOLE BLOOD. D.A.F.Chamone (1), M.Ivany-Silva (3), C.Cássaro (3), G.Bellotti (3), C.Massumoto (1) and A.Y.Hoshikawa-Fujimura (2), Department of Internal Medicine, Division of Hematology (1), Faculty of Pharmaceutical Sciences (2), Institute of Heart Diseases, São Paulo, Brazil

Guarana, a methylxanthine obtained from the seeds of *Paullinia cupana* has been largely used in the Amazon region by native indians during centuries as stimulant. We evaluated the effect of guarana on ex-vivo and in vitro platelet aggregation induced by adenosine-5-diphosphate (ADP) in human and rat whole blood with an impedance (Chrono-Log, model 500) and in their platelet rich plasma (PRP) with an optical aggregometer (Chrono-Log, model 440). Ex-vivo studies were carried out after single oral intake of guarana. Seven healthy volunteers (5 male and 2 female) aged 19-26 years who had taken no drugs for 10 days before, ingested 8gm of crude powder of guarana. Blood samples were drawn before and 1 hour after guarana intake. We observed a significative inhibition of platelet aggregation in whole blood meanwhile PRP was unchanged as compared to basal values. In vitro studies were performed in whole blood and PRP from human volunteers and male Wistar rats. The combined effect of guarana and adenosine was also studied. A control aggregation was always run with saline. The results demonstrated an inhibition statistically significative ($p < 0.001$) of platelet aggregation in whole blood. Differently from whole blood the PRP with the same concentration of guarana did not result in inhibition of ADP induced aggregation when evaluated with the impedance method. The blood incubation with adenosine and guarana resulted in synergistic inhibitory effect that was much more strinking in whole blood than in PRP. Guarana fails to inhibit aggregation of rat platelets.

Our results demonstrate that guarana prevents platelet aggregation in whole blood which depends on red blood cells, probably involving adenosine.

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WHOLE BLOOD AGGREGOMETER IN THE ASSESSMENT OF PLATELET HYPERAGGREGABILITY. R. Abbate, M. Boddi, S. Favilla, G. Costanzo, R. Paniccia, G.F. Gensini. Clinica Medica I, University of Florence, Italy.

The aim of this study has been to investigate the reliability of platelet aggregation in whole blood in some clinical conditions associated to thromboembolic complications.

18 healthy subjects, 15 patients affected by ischemic heart disease (IHD) and 15 patients affected by insulin independent diabetes, free of vascular complications, were studied. Collagen induced (2.5 mg/L f.c.) platelet aggregation was evaluated both in whole blood (WB) by using impedance whole blood aggregometer (Chrono-Log) and in platelet rich plasma (PRP) by Born aggregometer. Aggregation was significantly higher in whole blood than in PRP in all the groups investigated ($p < 0.01$). No significant difference was found in PRP aggregation among the three groups, whereas WB aggregation was significantly higher in the two patient groups (IHD 79.5 ± 14.2%, Diabetes 81.3 ± 17.6%) than in controls (64.8 ± 14.1%) ($p < 0.01$ for both comparisons). No relationship was found between WB aggregation and Hct or platelet number in any of the groups studied. A slight relationship was found between megathrombocyte count and WE aggregation values ($r=0.31$, $p < 0.05$).

Collagen platelet aggregation in WB seems to be provided with higher sensibility than PRP aggregation in detecting hyperaggregability, probably because it does not imply the selection of platelet populations with loss of larger platelets and of other blood cells.

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MEASURING WHOLE BLOOD PLATELET AGGREGATION AND ATP-RELEASE WITH A CHRONO-LOG WHOLE BLOOD LUMI-AGGREGOMETER: EFFECT OF STORAGE TIME OF BLOOD SAMPLES. F.C. Sieders (1), A.C. v. Houwelingen (2) and G. Hornstra (3). Department of Nutrition, Agricultural University, Wageningen (1), Department of Human Biology (2), and Department of Biochemistry (3), University of Limburg, Maastricht, The Netherlands.

The influence of storing blood for either one or two hours after blood sampling, on whole blood platelet aggregation and ATP-release was measured with a Chrono-log whole blood lumi-aggregometer, in 21 healthy male volunteers. Storage of blood samples, gently revolving at 37°C in an incubator for one hour, caused a significant increase in aggregation and release as compared with results obtained immediately after sampling. After two hours' storage, the values had returned to their initial levels.

Mean value (± SEM) before, after 1 hour, and after 2 hours' storage of blood samples (n=21).

parameter	before	after 1 hour	after 2 hours
Imax, log	1.78 (0.06)	2.03 (0.06)**	1.85 (0.06)
Rmax, inverse	7.99 (0.75)	6.83 (1.14)*	7.29 (0.77)

* p=<0.05, ** p=0.001 (paired t-test).
Imax: maximal aggregation, arbitrary units.
Rmax: maximum ATP-release (nmol).

Significant positive correlations were seen between values obtained before and after storage of blood, and between various aggregation and release parameters. In this study, bleeding time nor hematocrit values were significantly correlated with the aggregation and release parameters. The considerable influence of storage time on whole blood platelet aggregation and ATP-release underlines the importance of performing these determinations immediately after sampling, or possibly after a standardized storage time. Otherwise, comparison of results - obtained either in clinical situations or in trials - will increase variability as a result of which false conclusions may be obtained. This will be illustrated in a small trial using paracetamol.