Original Article

Effects of GO1 on Blood Elements

Effects of George Ohsawa One (Macrobiotic) on Biochemical and Haematological Parameters other than Prothrombin Time and Activated Partial Thromboplastin Time in Rabbits

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ABSTRACT

Objective: To determine the effects of George Ohsawa One (GO1) on sodium, potassium, calcium, hemoglobin and platelet count in rabbits with and without anticoagulated blood.

Study Design: Interventional study

Place and Duration of Study: This study was conducted at the Department of Pharmacology, Federal Post Graduate Medical Institute and National Health Research Complex, PMRC, Shaikh Zayed Hospital Complex, Lahore from January 2010 to August 2011.

Materials and Methods: Forty eight (n=48) male rabbits were included in the study. They were divided into two groups which were further divided into two subgroups each. About 700 grams of GO1 was used in the study.

Results: The effect of GO1 on platelet count, hemoglobin, serum sodium, potassium and calcium were found to be insignificant.

Conclusion: This work on the effect of GOI is first of its kind on biochemical and hematological parameters other than prothrombin time and activated partial thromboplastin time in rabbits measured quantitatively. Although the use of herbal products may not be dangerous per se, further research work is required to explore the benefits of GO1 on biochemical and hematological parameters before it can safely be used in humans as an anti-hemorrhagic agent.

Key Words: George Ohsawa One, Macrobiotic, Solanum Melongena

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INTRODUCTION

George Ohsawa One (GO1) is a macrobiotic (natural product) made with powdered carbonized aubergine and unrefined sea salt and is extremely easy to make and very economical. It is claimed that GO1 is an anti-hemorrhagic agent that can be used in accidents, trauma, rectal and internal hemorrhages, etc. Considering that GO1 is very economical, easy to prepare and simple to use, it is believed that it could represent a 'simple, economic and effective' solution to treat serious hemorrhagic emergencies, and the attendant electrolyte imbalances, offering a concrete possibility of saving millions of human lives.

The widespread use of plants and herbs in the treatment of disease is shown by their use in all the major systems of medicine, irrespective of their underlying philosophical basis.[1] The medicinal use of natural and unrefined plants and herbs undoubtedly began when the first intelligent animals perceived that certain food plants modified particular body functions.[2] The eggplant, aubergine, brinjal or baingan (Solanum Melongena) belongs to the family Solanaceae (also called night shades) and genus Solanum. It carries a fruit by the same name and is mostly used as a vegetable in cooking. As a nightshade, it is closely related to the tomato and potato plants.[3,4] GO1, the natural product used in this study is part of the ancient Oriental tradition, is a natural product (macrobiotic) made up of powdered carbonized aubergine and unrefined sea salt in a ratio of 3:1 (in powdered form). The proposed use of G.O.1 is as an anti-hemorrhagic agent in accidents, trauma, rectal and internal hemorrhages. It is already being marketed as a natural tooth powder all over the world (Mitoku Dentie Tooth Powder). It is claimed that this tooth powder keeps the gums and teeth healthy by stimulating the circulation in the mouth and maintaining a healthy, alkaline mileu in the oral cavity. It is (as claimed) excellent for serious tooth problems and bleeding gums. It is also claimed that it can be used on bee stings and to stop bleeding

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from minor cuts.[5-8] Considering that G.O.1 is extremely inexpensive to make, easy to prepare and very simple to use, it is believed that it could represent a 'simple, economic and effective' solution to treat serious hemorrhagic emergencies, offering concrete possibility of saving millions of human lives. G.O.1 was tested in Ghana, in patients with excessive bleeding as a result of snakebite and also during delivery and its related hemorrhages.[9]

Therefore, the present study has been undertaken with the aim of realizing clinical studies with animals (rabbits) using G.O.1 as an anti-hemorrhage and haemostatic treatment and for localizing / highlighting its area of effect, so that further narrowed down, specifically aimed studies, if needed, may be carried out. The following biochemical and hematological parameters were studied: Levels of Sodium, potassium, calcium, haemoglobin and platelet count.

MATERIALS AND METHODS

This interventional study was carried out in the Department of Pharmacology, Federal Post Graduate Medical Institute and National Health Research Complex, PMRC, Sheikh Zayed Hospital Complex, Lahore from January 2010 to August 2011. .Initially 8 rabbits were selected to see the effect of G.O.1 for PT and APTT separately. Rabbits were divided into two equal Groups. Group 1 was given Warfarin and was further divided in 1 A (intervention group given G.O.1) and 1 B (control group given Normal saline) to see effect on PT. Group 2 was given Heparin and was further divided in 2A (intervention group given G.O.1) and 2B (control group given Normal saline) to see effect on APTT. Male rabbits, aged between 6–10 weeks and average weight of 1200 to 1500 grams were included in this study. Female rabbits and rabbits suffering from any skin disease were excluded.

After clearance from the Ethical Review Board, 48 rabbits were divided into two study groups as follows: Group 1 having 18 rabbits and Group 2 having 30 rabbits. Each group was further sub divided equally into two subgroups each, i.e., group 1A and 1B, group 2A and 2B. Initially, blood from all the rabbits was checked for the required parameters in order to get the baseline values, i.e. Hemoglobin, Platelets, serum sodium, serum calcium and serum potassium levels. Group 1 (n=18) was given Warfarin orally, once daily, in the morning as a single dose, for an average of seven days[10]. Each dose was 2.5 mg/day and group 2 (n=30) was given heparin 12 hourly, subcutaneously, in the morning and evening for seven days. Each dose was 120 units / kg body weight. Group 1 treated with Warfarin and Group 2 treated with Heparin till the desired values (three times the normal) of the above mentioned parameters, i.e., Prothrombin time for rabbits given Warfarin and the Activated partial thromboplastin time for rabbits given Heparin, were obtained. After achieving the optimum levels of the required tests, 50% of the rabbits in each group (group 1A, and group 2A) were treated with 05 ml of G.O.1, (contains 5 mg G.O.1), given orally (by a feeding syringe) and repeated twice with an interval of 15 minutes between each dose, and each time the respective parameters (hemoglobin, platelets, Na^+ K^+ and Ca levels) for each group were noted, whereas the other 50% of the rabbits in each group (group 1B and group 2B) were given 05 ml of normal saline (as placebo), and their respective parameters, as mentioned above were noted simultaneously as controls.

Data collected was entered and analyzed using SPSS version 15. Data for the animals given heparin was analyzed in the same way except that for this group, APTT was used instead of PT. Post–hoc (Boneferroni) was used for multiple comparisons, wherever needed. P value of <0.05 was considered statistically significant.

RESULTS

Sodium level of animals were recorded at the beginning of study and then repeated for three times. The average sodium levels of group 1A at the start of study were 145±6, for 1B it was 137±4. The average baseline sodium level in rabbits was 140±4.2 mg/dl. There was no change in the sodium level, at any stage, in all groups of rabbits (Fig.1). The potassium levels of animals were recorded at the beginning of study and then repeated for three times. The average potassium level of group 1A at the start of study was 4.6±1.2 gm/dl, for 1B it was 3.6±0.3 gm/dl.

The average potassium level in both groups of rabbits was 3.9±0.65. The rabbits in group 1A had slightly higher normal values of potassium as compared to the other groups. Apart from this, there was no significant change in the potassium level at any stage in any group (Fig.2). The Calcium levels of animals were recorded at the beginning of study and then repeated for three times. The average Calcium level of group 1A at the start of study was 13.8±0.7 gm/dl, for 1B it was 13.1±1.8 gm/dl. The average baseline calcium level in the rabbits was 12.6±0.9. No major change was observed in the calcium level in any group at any stage of the study (Fig 3).

It was interesting to note that when compared, most normal haematological and biochemical values in rabbits, quoted internationally were almost the same as found in this study except for serum calcium. Calcium levels were slightly higher in our study as compared to the international reference values. The haemoglobin levels of animals were recorded at the beginning of study and then repeated for three times. There was a decrease in haemoglobin level in rabbits from the average normal baseline of 12.75±0.98 g/dl. This was slightly more in group 1 than 2.

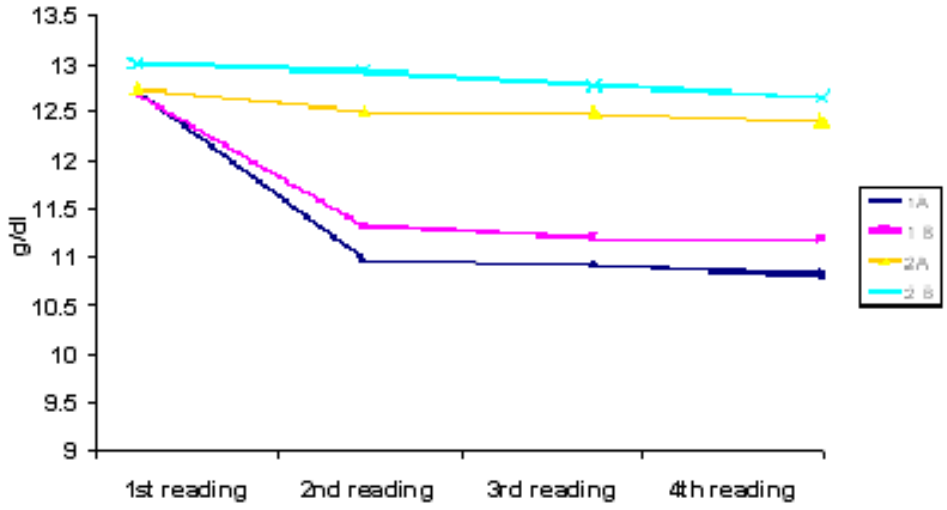

Figure No.1: Haemoglobin levels for groups 1A, 1B and 2A, 2B at four distinct time intervals

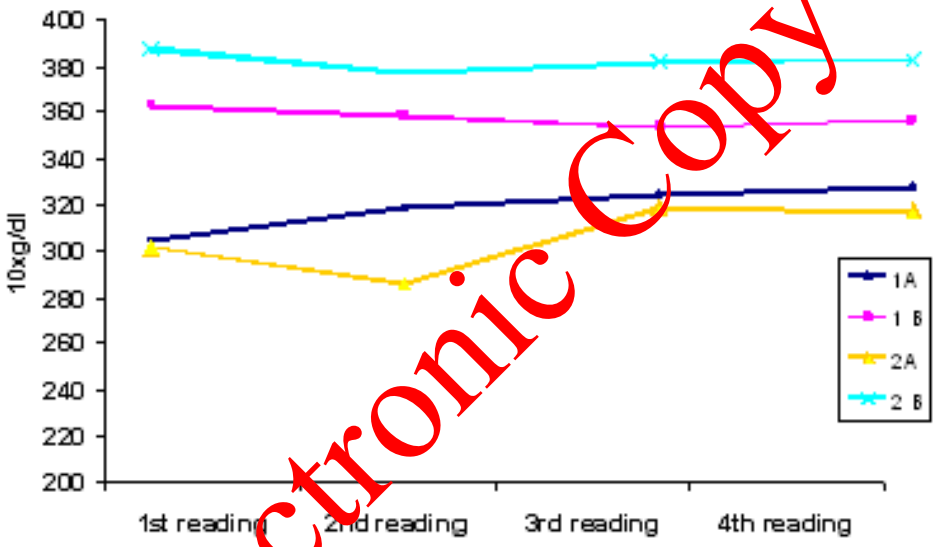

Figure No.2: Platelet counts for groups 1A, 1B and 2A, 2B at four distinct time intervals.

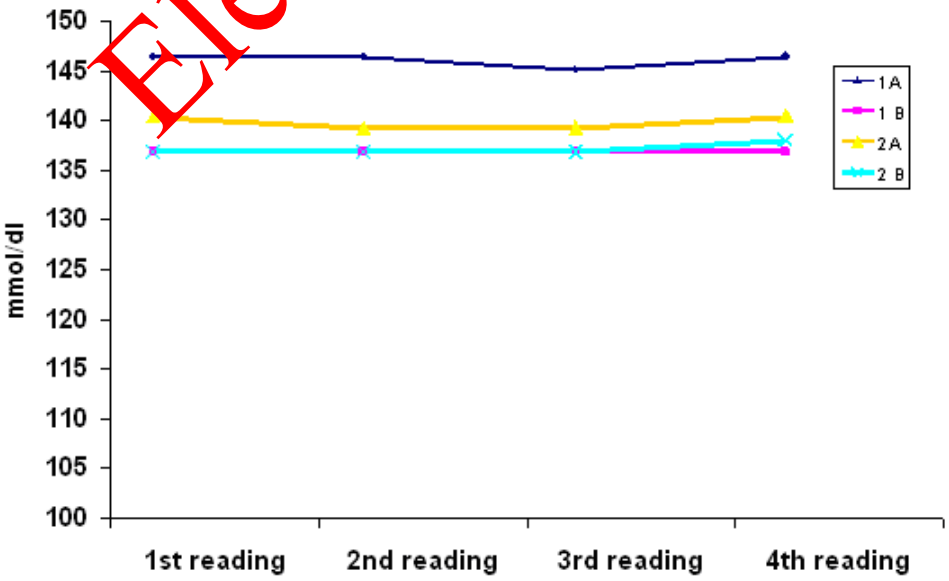

Figure No. 3: Sodium levels for groups 1A, 1B and 2A, 2B at four distinct time intervals

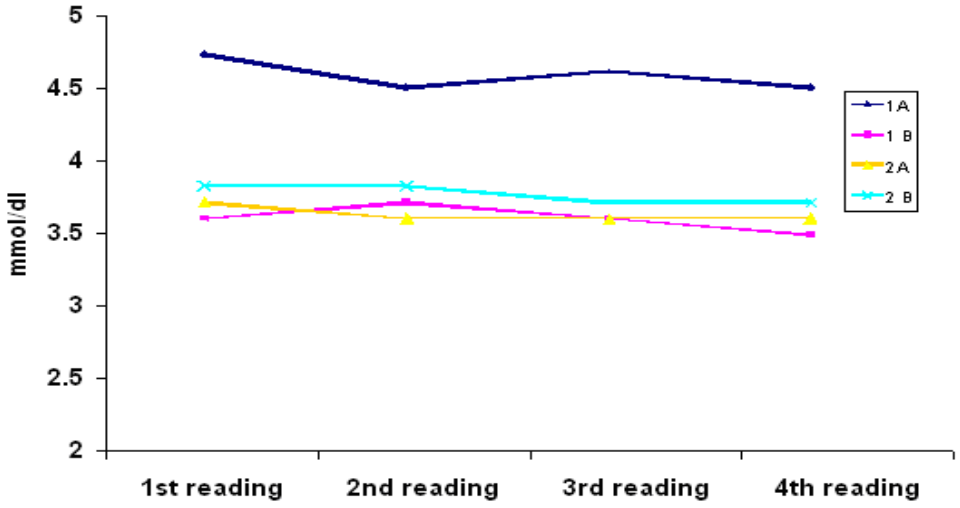

Figure No. 4: Potassium levels for groups 1A, 1B and 2A, 2B at four distinct time intervals

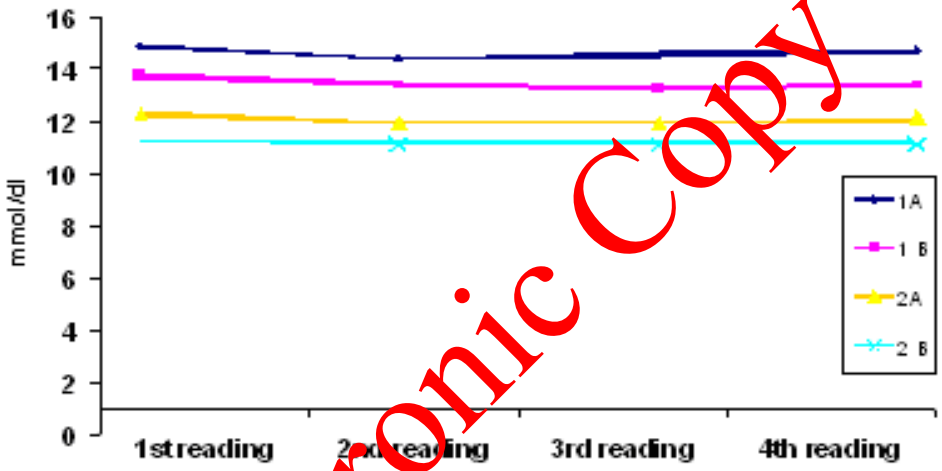

Figure No. 5: Calcium levels for groups 1A, 1B and 2A, 2B at four distinct time intervals

This may be is because of mild bleeding in rabbits, more so in group one, because of the narrow therapeutic index of Warfarin (Fig. 4).

The Platelets counts of animals were also recorded at the beginning of study and then repeated for three times. The average platelets counts of group 1A at the start of study were 330±79, for 1B it was 368±28. The average baseline platelet count in rabbits was 352±73. Other than minor changes, there was no marked difference in the platelet count in any of the groups, i.e., 1A, 1B, 2A, 2B (Fig. 5)

DISCUSSION

The authors' already published work on the effect of G.O.I (George Ohsawa one) on prolonged coagulation parameters in rabbits measured quantitatively, is first of its kind in the field. Already published data shows evidence that suggests G.O.1 to have statistically significant effect on the Prothrombin time prolonged by Warfarin in group 1 rabbits.

The current paper highlights its effect on biochemical and hematological parameters other than Prothrombin time and Activated partial thromboplastin time, and this work, like the previous published results, is also first of its kind

This study did not find significant differences in these parameters but does point to the feasibility of larger studies on the subject.

Limited information about the pharmacokinetics, pharmacodynamics, and manufacturing properties of herbal and dietary supplements leads to difficulty in characterizing and predicting interactions and understanding their mechanisms. Although the use of herbal products may not be dangerous per se, however further research work is required to explore the benefits of G.O.1 in prolonged coagulation parameters and to exactly determine its mechanism of action before it can safely be used in humans as an anti-hemorrhagic agent.

CONCLUSION

This work on the effect of GOI is first of its kind on biochemical and hematological parameters other than

prothrombin time and activated partial thromboplastin time in rabbits measured quantitatively. Although the use of herbal products may not be dangerous per se, further research work is required to explore the benefits of GO1 on biochemical and hematological parameters before it can safely be used in humans as an anti-hemorrhagic agent.

Conflict of Interest: The study has no conflict of interest to declare by any author.

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