The effect of taurine addition on the complete blood count

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The complete blood count (CBC), also known as hemogram or blood panel, one of the components of the routine physical examination, aims to provide a lot of information to the physician regarding the state of a person's general health. The CBC is frequently used as an essential screening test for a wide range of conditions and disorders, including anemia, infection and leukemia. The CBC test, which is reliably performed by automated machines in most laboratories, measures the quantity of all the cellular part of the blood: red blood cells (RBC), white blood cells (WBC) and platelets (PLT). Additionally, the CBC affords some valuable information on other indices related to each type of blood cell. Any abnormities (increases or decreases) in blood cell counts or related indices as revealed by the CBC may indicate an underlying medical condition that directs and justifies further, more specific, laboratory investigations to confirm the diagnosis[1,2]. For trustworthy results, the CBC test should be performed within a certain time limit which may be affected by the type of anticoagulant used and the preservation temperature and, to some extent, the automatic cell counter used[3,4]. However, in different circumstances, processing blood samples is not possible within these time limits; hence blood samples received at the laboratories are either discarded or proceeded with doubtful reliability.

In the current issue of the Revista Brasileira de Hematologia e Hemoterapia, Sirdah et al. provide a new prospect to extending the time limit for trustworthy CBC test results[5]. In their study the authors added the naturally-occurring ß-sulfonated amino acid, taurine, to K_3-EDTA blood and tracked the changes on a daily basis for seven successive days at two different temperatures: ambient and refrigerated. The selection of taurine as an additive to the K_3-EDTA blood is felicitous due to the striking beneficial effects of taurine on biological systems and cells which include antioxidation, inhibition of lipid peroxidation, stabilization of biomembranes, and maintenance of intracellular ions homeostasis[6]. The significance of the study of Sirdah et al. is not limited to the promising results achieved; it could also encourage future studies to investigate the trustworthiness of the CBC over time using other chemical compounds. However, in future works, the blood film should be evaluated which may reveal the positively or negatively effects of taurine on RBC poikilocytosis. As taurine may exert beneficial effects on biomembrane stabilization, it is worthwhile to investigate the effect of taurine on RBC rheological properties.

Finally, the study of Sirdah et al. demonstrates the feasibility of adding an antioxidant to whole blood collected in K_3-EDTA tubes which exhibited different patterns of reliability on CBC parameters over time. Moreover, it creates an opportunity to conduct further comprehensive comparative studies to evaluate other antioxidants and chemical compounds on the stability and reliability of laboratory tests that depend on the cellular components of the whole blood over time.

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