

In vitro Inhibitory Action of an Aqueous Extract of Carob on the Release of Myeloperoxidase by Human Neutrophils

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Abstract : Background: Myeloperoxidase (MPO) is a hemic enzyme found in high concentrations in the primary neutrophils granules. In addition to its peroxidase activity, it has a chlorination activity, using hydrogen peroxide and chloride ions to form hypochlorous acid, a strong oxidant, capable of chlorinating molecules. Bioactive compounds contained in medicinal plants could limit the action of this enzyme to reduce the reactive oxygen species production and its chlorination activity. The purpose of this study is to evaluate the effect of the carob aqueous extract (CAE) on the release of MPO by human neutrophils in vitro and its activity following stimulation of these cells by PMA. Methods: Neutrophils were isolated by simple sedimentation using the Dextran/Ficoll method. After stimulation with phorbol 12-myristate 13-acetate (PMA), neutrophils release the MPO by degranulation. The effect of CAE on the release of MPO was analyzed by the Western blot technique, while, its activity was determined by biochemical method using the method of 3,3', 5,5'- Tetramethylbenzidine (TMB) and hydrogen peroxide. The data were expressed as mean \pm SEM. Results: The carob aqueous extract causes a decrease in MPO quantity and activity in a concentration-dependent manner which leads to a reduction of the production of the ROS (reactive oxygen species) and the protection of the molecules against oxidation and chlorination mechanisms. Conclusion: Thanks to its richness in bioactive compounds, the aqueous extract of carob could limit the development of damages related to the uncontrolled activity of MPO.

Keywords : carob, MPO, myeloperoxidase, neutrophils, PMA, phorbol 12-myristate 13-acetate

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