

CHARACTERIZATION OF LIPASE ACTIVITY IN GREEN COFFEE BEANS DURING STORAGE AND GERMINATION

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Coffee seeds possess an intermediate storage pattern, showing a non-quiescent behaviour characterized by various metabolic reactions occurring during storage. In particular, lipase is the main enzyme involved in the mobilization of triacylglycerols, providing energy and a source of carbon skeleton during early stages of germination. During storage, the triacylglycerols might be involved in the generation of undesirable compounds (known as “off-flavours”), lowering both the viability of coffee seeds and the cup quality. In this work, the soluble protein fraction from coffee seeds and plantlets was extracted by acetone and then was utilised to assay lipase activity. Green coffee beans, harvested in Colombia, were stored at room temperature for 2-3 months, in order to verify the influence of prolonged storage on lipase activity. For germination experiments, the seeds were imbibed for 7 days at 30 °C and transferred in perlite at 28 °C and 90% R.H. for further 3 weeks. Lipase activity was detected by a colorimetric method based on specific degradation of a chromogenic substrate, at pH 8.2. Green coffee seeds exhibited an appreciable lipase activity that was slightly increased during storage. Such an activity was inhibited by tetrahydrolipstatin (THL) in a concentration-dependent manner, while it was slightly stimulated by both EGTA and EDTA. During the germination, after 10, 14, 17 and 21 days, lipase activity showed an initial increase that was followed by a gradual decrease. The effect of the presence or absence of the parchment (seed coat), during the first stages of germination, has also been investigated.