EFFECT OF ASPARAGINASE ON FLAVOUR FORMATION IN ROASTED COFFEE

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There are a number of processing steps in coffee production, such as bean fermentation, bean roasting, freeze or spray drying, decaffeination and/or blending. Amongst these, the roasting stage has the most profound effect on the chemical composition, as the low moisture content of the bean and high temperatures facilitate the Maillard reaction, leading to desirable flavour and colour. However, acrylamide, a potential carcinogen, is also formed via the Maillard reaction during the roasting stage [1]. Since its discovery in a range of heated foods that are high in free asparagine and reducing sugars, several acrylamide mitigation strategies have been developed. These include modification of raw materials, optimization of processing conditions and addition of exogenous additives, to reduce the acrylamide content in the final product [2]. The use of asparaginase, an enzyme that hydrolyses the acrylamide precursor asparagine into aspartic acid and ammonia, is seen as a promising procedure to mitigate acrylamide formation in food products, without compromising desirable sensory qualities [3]. This study will examine the effect of different levels of asparaginase treatment on the asparagine content of green coffee beans prior to roasting and will also examine the impact of the asparaginase treatments on the formation of acrylamide and thermally generated aroma compounds in roasted coffee.

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