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Effect of immature harvesting on the physical and chemical properties of local and panniyur-1 pepper (*Piper nigrum* L.)

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The black pepper of commerce is the dried mature berries of *Piper nigrum* L. The aim of the study was to identify the changes of chemical and physical properties with maturity of berries. Pepper spikes of different maturity stages, starting from two months up to eight months were harvested. Number of berries per kilogram, bulk density and weight of a seed were determined for fresh berries and they were blanched for two minutes at 80 ^{o}C and oven dried at 50^{o}C to obtain black pepper. Weight recovery and light berries were determined after drying. Dean and stark method, Water distillation method, Soxhlet extraction method and refluxing method were used to determine moisture, oil, oleoresin and piperine contents respectively. Chemical constituents in oil were analyzed using Gas Liquid Chromatographic technique. Results indicated that physical parameters like mean berry weight, weight recovery and bulk density of fresh and dry pepper were increased while number of fresh and dry berries per kilogram and percentage light berries decreased with maturity. Chemical parameters like volatile oil, oleoresin and piperine contents were increased with maturity up to 5 months and then decreased. When consider the oil constituents in local selection α pinene concentration was increased up to 5 months and declined while camphene, β pinene, α phellandrene, limonene and sabinene concentrations increased with maturity. β caryophyllene concentration was fluctuated with maturity. It was highest at 4 months and lowest at 6 months maturity stage. In Panniyur -1 cultivar α pinene, β pinene and β caryophelline fluctuated during the development and α pinene and β pinene were highest at 6 months. Highest content of β caryophelline was found at 4 months. Highest levels of sabinene and limonene were found at 6 and 7 months maturity, respectively. Proportions of the most of the other components fluctuated with further berry maturity. When consider the changes of chemical and physical parameters most profitable harvesting time for black pepper production should be after 6 months maturity.

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