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Fungal contaminations of dried black pepper (*Piper nigrum* L.) collected from different market places in Matale area

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The major factors deciding the quality of black pepper are appearance of the final product, flavor, aroma and pungency, free from foreign or extraneous matter, long shelf life and fit for human consumption. To meet the above characteristics pepper producers should take special care during post harvest operations to avoid all unfavorable circumstances leading to deterioration of above characteristics. Out of all the above mentioned quality characteristics, most of the major regulatory bodies pay much attention on cleanliness, sanitary and phyto-sanitary issues related to the black pepper final product.

This study was conducted to investigate on fungi associated with dried black pepper that is ready for consumption. The samples collected from different wholesale and retail market places in Matale area were analyzed following the methods using United States food and drug administration bacteriological analytical manual (USFDA-BAM). The common fungi species found were *Aspergillus* spp., *Penicillium* spp., *Mucor* spp., *Fusarium* spp. and *Curvularia* spp. Out of three different *Aspergillus* spp. observed, *Aspergillus niger* was successfully identified by studying morphological features. Internal invasion of *Aspergillus* spp. and *Penicillium* spp. were observed in several samples.

The levels of fungi with dilution plating technique ranged from 7.3×10^2 cfu/g to 8.8×10^7 cfu/g. These results were statistically analyzed by one sample t test. Mean of the sample cfu/g was significantly higher than the IPC standard value of 1×10^3 cfu/g. The moldiness percentage observed by analysis of non surface disinfected (NSD) method ranged from 74% - 100%. The very same samples gave exactly different values for moldiness percentages when analyzed following Sri Lankan Standards. Those values ranged from 6%-24%. When the surface disinfected samples were directly plated (SD method) it gave moldiness from 4%-42%. By comparing SD and NSD values of the same sample it can be determined if moldiness is due to surface contamination or to internal invasion and growth. IPC recommends that the maximum percentage of mouldiness should be 1% (% by weight). The extraneous matter levels of the samples ranged from 0.01% - 0.08% by mass. Those values are in the accepted range of IPC (% by weight, maximum 1%).

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