A MACHINE VISION SYSTEM FOR ESTIMATION OF THEAFLAVINS AND THEARUBIGINS IN ORTHODOX BLACK TEA

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Abstract — Orthodox black tea quality depends upon the amount of certain organic compounds present and out of these, theaflavins (TF) and thearubigins (TR) are the most important ones While TF is responsible for attractive golden colour, increased brightness and astringency in tea liquor, TR is reddish brown, reduces the brightness of tea liquor and contribute mostly for the ashy taste of the liquor with minor improvement in astringency. The rapid estimation of TF and TR thus may resolve the problem of certain uncertainty or ambiguity that may arise during quality assessment of tea by the tea tasters. In this paper, a new method for rapid measurement of concentration of TF and TR is described using a machine vision system taking images of tea liquor and employing artificial neural networks (ANN). The results show good correlation of estimated values of TF and TR with the actual concentrations obtained using ultraviolet-visible spectrophotometer (UV-VIS).

Index Terms: Theaflavins (TF); Thearubigins (TR); Machine Vision System; Orthodox black tea; UV-VIS spectrophotometer; Generalised Regression Neural Network (GRNN); Back propagation multilayer perceptrons (BP-MLP); Radial Basis Function Network (RBFN);