Pigment stability studies in selected pigment-producing microbes from New Zealand environment

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The industrial production of natural food colourants is already well-established and expanding. However, the range of natural colour-shades is still limited compared to synthetic dyes. Besides, the use of plant extracts is known to be expensive and uncompetitive to synthetic dyes due to their high production costs. Consequently, microorganisms are becoming a more popular alternative source for natural food grade pigments. Development of microbial food grade pigments are likely to cut down the high production cost of natural colours, thus leading to a cheaper source of natural food colourants among the modern consumers. Preceding commercialization, pigment stability and toxicity assessment are required in order to determine their suitability to the food industry. We, therefore, have screened 286 pigment-producing microbial strains isolated from New Zealand environment. Based on water solubility and colour-shades of interest, 41 pigments have been short-listed for pigment stability tests towards different pHs, temperatures and light. To date, our current results showed that 81% of the yellow-to-reddish water-soluble pigments and the red SVB-B50 water-insoluble pigment were stable at all ranges of temperature i.e. -20^{o}C, 4^{o}C, 60^{o}C, 100^{o}C and microwave heat. Light and pH stability tests are being carried out. Further to this study, metabolomics tools will be incorporated to elucidate the metabolic pathway for biosynthesis of a selected microbial pigment with most potential for industrial application, and metabolic engineering strategies will be determined aiming for improvement of the pigment production yields during fermentation.