

**EXTRACTION OF COCONUT TESTA BASED COLOURANT AND ITS
STABILITY IN DIFFERENT pH**

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Certified that this thesis entitled “**Extraction of coconut testa based colourant and its stability at different pH**” is a record of research work done independently by **Mr. Sourav Das** under my guidance and supervision and that it has not previously formed the basis for the award of any degree, diploma, fellowship or associate ship to him.

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CERTIFICATE

This is to certify that the dissertation entitled “*Extraction of coconut testa based colourant and its stability at different pH*” is an authentic work done by SOURAV DAS under the supervision and guidance of Dr. Ramesh SV Senior Scientist (Biotechnology), ICAR-Central Plantation Crops Research Institute (ICAR-CPCRI), Kasaragod for the partial fulfilment of the requirement for the Degree of Master of Science in Chemistry, Government College Kasaragod.

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ABSTRACT

Coconut (*Cocos nucifera* L.) is characterized with the presence of multiple components that contribute to the human nutrition and hence the fruit is widely used in many agro-industries for the production of wide array of food products. The principal by-product obtained during the production of desiccated coconut milk and virgin coconut oil, is coconut testa. It is brown thin layer that covers the endosperm and are currently utilized as animal feed or abandoned. Testa constitutes 18% of the weight of the coconut kernel and is a natural source of bioactives such as phenolics and flavonoids. In this study, a coconut testa-based colourant was developed using laboratory-scale water bath and a variety of organic solvents at different time and temperature combinations. A quantitative and qualitative assessment of biochemical characters such total phenolic content (TPC), flavonoids, anthocyanin concentration, and antioxidant activity was performed. Acetone extract of the testa yielded high content of total polyphenols, anthocyanin and consequently produced high antioxidant activity, while testa based ethanol extract yielded the highest content of flavonoids. Further, the stability of testa based colourants (acetone and ethanol extract) in various pH ranges (1-10) was examined and found to be satisfactory. The extracted biocolourant was then converted into a powder form utilizing foam mat drying process for the potential use in food industrial applications.

Key words: Coconut testa, Biocolourant, Phenolics, Antioxidants, pH stability, Foam mat drying