

# EXTRACTION AND QUANTITATIVE DETERMINATION OF ASCORBIC ACID FROM BANANA PEEL *MUSA ACUMINATA* 'KEPOK'

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**ABSTRACT:** This paper discusses the extraction of an antioxidant compound, which is ascorbic acid or vitamin C, from a banana peel using an ultrasound-assisted extraction (UAE) method. The type of banana used was *Musa acuminata* also known as "PisangKepok" in Malaysia. The investigation includes the effect of solvent/solid ratio (4.5, 5 g and 10 ml/g), sonication time (15, 30 and 45 mins) and temperature variation (30, 45 and 60°C) on the extraction of ascorbic acid compounds from the banana peel to determine the best or optimum condition of the operation. Out of all extract samples analyzed by redox titration method using iodine solution, it was found that the highest yield was  $0.04939 \pm 0.00080$  mg that resulted from an extraction at 30°C for 15 mins with 5 ml/g solvent-to-solute ratio.

**ABSTRAK:** Kertas kajian ini membincangkan kaedah mengekstrak antioksidan khususnya asid askorbik atau vitamin C daripada kulit pisang melalui teknik ultrasonik (UAE). Jenis pisang yang dipilih sebagai bahan kajian ialah *Musa acuminata*, sejenis pisang yang digunakan dalam masakan. Ia juga dikenali sebagai pisang kepok di Malaysia. Kajian kali ini mengetengahkan tindakbalas nisbah pelarut/pepejal (4.5, 5 g dan 10 ml/g), masa proses ultrasonik (15, 30 and 45 min) dan perubahan suhu (30, 45 and 60°C) ke atas kadar ekstrak asid askorbik daripada kulit pisang bagi menentukan tindakbalas optimum didalam proses ini. Selepas analisis dibuat melalui kaedah titrasiredoks, didapati bahawa hasil yang tertinggi dari segi kadar ekstrak asid askorbik adalah  $0.04939 \pm 0.00080$  mg pada catatan suhu 30°C untuk 15 minit dengan pelarut/ bahan larut 5 ml/g.

**KEYWORDS:** *Musa acuminata; ultrasound-assisted extraction; vitamin C; redox titration*

## 1. INTRODUCTION

Banana is one of the main crops in the world that has significance to humans for its nutrition and mineral contents. It must have been one of the first known tropical crops since there are records of it being in cultivation 4000 years ago [1]. According to [2], edible bananas originated from Melesia, a biogeographical region consisting of the primary centre including Malaysia, Indonesia, Philippines and New Guinea as well as the secondary centre which is India.

As far as banana is concerned, there are two type of wild banana originally from South East Asia: *Musa acuminata* Colla (AA) and *Musa balbisiana* Colla (BB) where the