

## The Optimized Extraction Method of Passion Fruit Seeds and its Antioxidant Activity

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**Abstract.** Background: Passion fruit belongs to Passifloraceae family and has high-value economics. Passion fruit seeds contain a lot of fiber and nutrients as well as plant-based vegetables that can be used for the cosmetic and food industries. The research aimed to manage and developed passion fruit waste into an economically valuable product. Methodology: The passion fruit seed samples were obtained from the passion fruit syrup factory waste in the city of Makassar, it was macerated with acetone, ethyl acetate, chloroform, methanol, and n-hexane. The extraction used the maceration assisted-ultrasonicator method. Results: The results showed that the extraction yields for all extract ethyl acetate 10.55% > methanol 6.45% > acetone 4.88% > chloroform 3.71% > n-hexane 2.97%. The result of antioxidant capacity revealed that the methanolic extract had the highest scavenging activity when compared with other extracts. Discussion: The yields of extraction by various solvents decreased in the following order: Ethyl acetate 10.55% > methanol 6.45% > acetone 4.88% > chloroform 3.71% > n-hexane 2.97%. It can be seen that the extraction yield of ethyl acetate (10.55 %) is higher than other solvents. This shows that the extraction yield increases unrelated to the polarity of the solvent used in extraction. These results indicate that increasing the extraction yield correlates to the chemical compounds of the passion fruit seed. Compounds with moderate polarity may have been extracted and contributed to a higher yield. This may be attributable to the higher solubility of moderate polarity in ethyl acetate and methanol. The effect of antioxidants on DPPH is thought to be due to their hydrogen donating ability. Radical scavenging activities are very important to prevent the deleterious role of free radicals in different diseases, including cancer. DPPH free radical scavenging is an accepted mechanism for screening the antioxidant activity of plant extracts. In the DPPH assay, violet color DPPH solution is reduced to a yellow-colored product, diphenylpicryl hydrazine, by the addition of the extract in a concentration-dependent manner. Our results revealed that the methanolic extract had the highest scavenging activity when compared with other extracts. Methanol extract showed an antioxidant capacity of 144 ug/ml, then followed by acetone and chloroform extracts at 147 ug/ml, and ethyl acetate extract at 158 ug/ml. In contrast, hexane extract does not show antioxidant activity at 962 ug/ml. This result showed the activity accordingly the chemical constituents of the passion fruit extract. Finally, polyphenol contents and tocopherols scavenge the DPPH radicals by their hydrogen donating ability. Conclusions: This study reports the differences in yield extraction according to the solvent system. The highest yield extract showed ethyl acetate extract at 10.55%. The antioxidant capacity confirms the highest scavenging radical on methanol extract.

**Keyword:** passion fruit, yield extract, antioxidant