

ANTIOXIDANT PROFILE OF LIQUID FRACTION FROM DANDELION LEAF KOMBUCHA FERMENTATION

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Dandelion (*Taraxacum* genus) is a perennial plant that has a wild distribution on hillsides in the Northern Hemisphere [1]. Although it has medicinal uses [1], dandelion is considered a weed [2] and therefore can be classified as green waste and utilized as a source of phytochemical compounds. Kombucha fermentation, occurring via a symbiotic culture of bacteria and yeasts (SCOBY), can biotransform plant-derived substrates, altering the extraction and properties of antioxidant compounds [3]. In this study, dandelion leaves (*Taraxacum* sp.) were used as a substrate for fermentation using a SCOBY kombucha inoculum, in parallel with wild-type fermentation which served as a control. The incubation period lasted for 1, 3, and 5 days at 25 °C and 120 rpm. The analysis was performed on the liquid fraction of the fermentation samples. Spectrophotometric methods were applied to evaluate total polyphenolic content, 2,2-diphenyl-1-picrylhydrazyl (DPPH) and hydroxyl radical scavenging activities. Measurements were done in triplicate.

Statistical test of Shapiro–Wilk was used to assess the normality of the data. When the normality assumption was met, one-way ANOVA followed by Tukey’s HSD post-hoc test was applied. When normality was violated, Welch’s ANOVA with the Games–Howell post-hoc test was used instead.

According to total polyphenolic content and DPPH scavenging activity after fermentation there was no statistically significant difference between three days of fermentation with SCOBY inoculum. While across all the spectrophotometric tests the treatment group showed statistically significant increase after fermentation comparing to control of the same day which ranged from 25.6 to 49.4%. The first day of fermentation using kombucha culture showed the highest total polyphenolic activity equal to 5.31 mg of rutin equivalents in ml comparing to all samples. The DPPH scavenging activity was highest on days 1 and 3 of treatment, equal to the same amount of 3.05 mg of rutin equivalents in ml comparing to all samples. According to the hydroxyl radical scavenging activity, the best performance was recorded on day 3 of treatment, and it was equal to 3.72 mg of ascorbic acid equivalents in ml among the samples.

Overall, application of kombucha inoculum to dandelion leaf improved antioxidant properties of the liquid part of fermented samples versus wild-type fermentation. However, there was no greater variation among the three days of kombucha inoculum fermentation.

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