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Zahra Mohammadi, Mahdi Kashaninejad, Aman Mohammad Ziaifar, Mohammad Ghorbani



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1 **Peeling of Kiwifruit Using Infrared Heating Technology: a Feasibility and** 2 **Optimization Study**

3 **Zahra Mohammadi^a, Mahdi Kashaninejad^{a*}, Aman Mohammad Ziaifar^a, Mohammad**
4 **Ghorbani^a**

5 *^a Department of Food Process Engineering, Gorgan University of Agricultural Sciences and Natural*
6 *Resources, Basij Square, Gorgan, Iran.*

7 * Corresponding author E-mail: kashani@gau.ac.ir, Tel./fax: +98 1732423038

9 **Running Title: Peeling of Kiwifruit Using Infrared Heating Technology**

10 **Abstract**

11 Infrared (IR) technology has been studied as an alternative to conventional food processing
12 technologies. The IR technology has attractive merits such as uniform heating, high heat transfer
13 rate, reduced water, and energy consumption and improved product quality and safety. This
14 research studied the feasibility of kiwifruit peeling using IR heating. The response surface
15 methodology (RSM) was used to investigate the effects of IR radiation power (250-850 W), the
16 distance between IR emitter and sample (10-70 mm) and heating time (45-125 s) on the peeling
17 performance and physicochemical properties of kiwifruit. Lye-peeling was used as the control
18 treatment to compare the efficiency of IR peeling. Heating with a power of 446 W at the distance
19 of 70 mm for 125 s was found to be the optimum operating conditions for the IR peeling of
20 kiwifruit. Under these conditions, the results were a peelability of 90 %, weight loss of 4.5 %,
21 peel thickness of 0.4 mm, surface temperature of 64.1 °C, puncture force of 57.7 N, color
22 difference of 2.4 and ascorbic acid content of 140 mg/100 g fresh fruit. Compared to hot lye
23 peeling, the IR radiation heating caused significant reduction in weight loss, surface temperature,
24 and color differences. It also maintained the firmness of fruits.

25 **Keywords:** Lye peeling, Peeling performance, Ascorbic acid, Firmness, Response surface
26 methodology

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