To review this article online, scan this QR code with your Smartphone

Intensity of Solar Ultraviolet-A Radiation at Date Harvest Time in Groves around Jiroft, Southeastern Iran, 2017

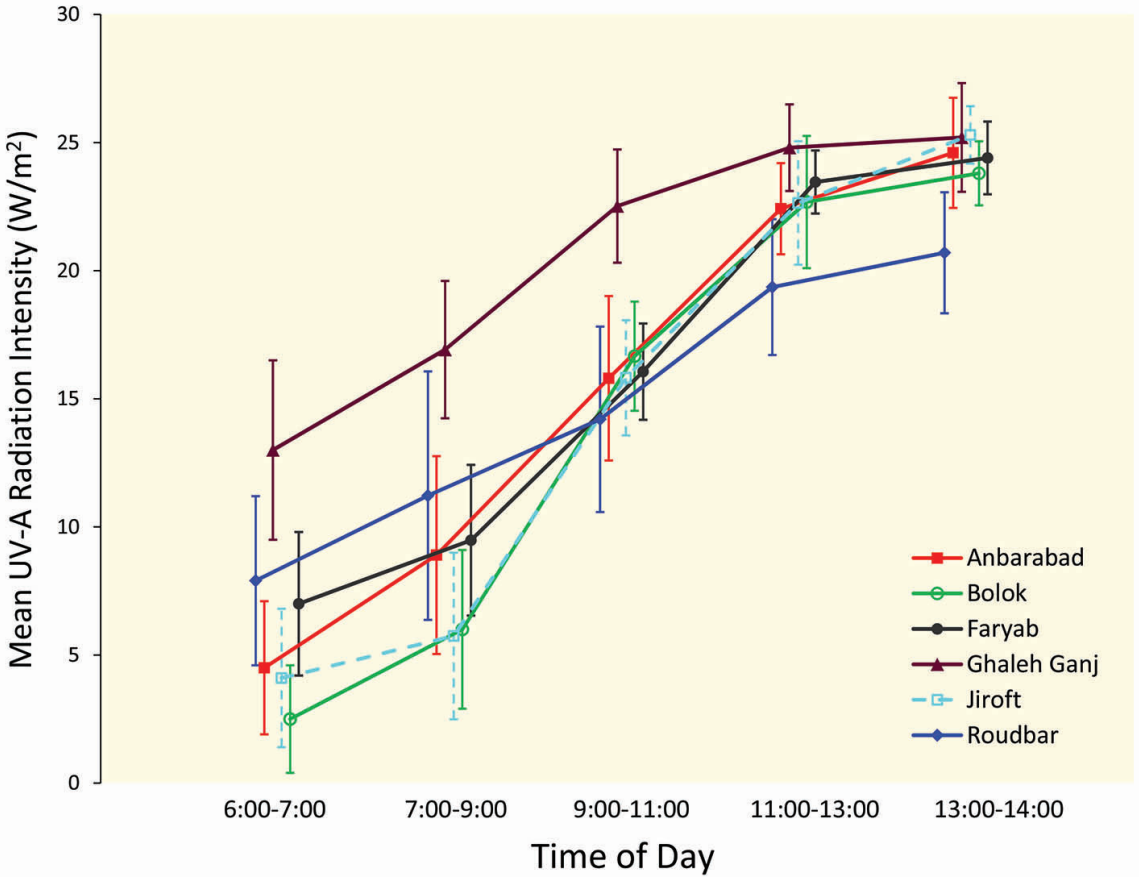
Mostafa Mohammadian[1], Esmail Charkhloo[2]

[1]Social Determinants of Health Research Center, Institute for Futures Studies in Health, Kerman University of Medical Sciences, Kerman, Iran

[2]Department of Environment Health Engineering, Faculty of Health, Jiroft University of Medical Sciences, Jiroft, Iran

We are exposed to ultraviolet (UV) light every day. Depending on its wavelength, UV light has various biological effects. The waveband 315 to 400 nm is referred to "UV-A." UV-A causes several adverse effects on human including decreased immunity, flakiness, skin blister, erythematosus, and skin cancer.[1,2]

Figure 1: Mean intensity of UV radiation at various time of day measured in 6 studied areas. Error bars represent SD.



Correspondence to Esmail Charkhloo, MD, Department of Environment Health Engineering, Faculty of Health, Jiroft University of Medical Sciences, Jiroft, Iran
Tel: +983443310915
E-mail: echarkhloo@yahoo.com
Received: Jan 11, 2018
Accepted: Mar 7, 2018

Cite this article as: Mohammadian M, Charkhloo E. Intensity of solar ultraviolet-A radiation at date harvest time in groves around Jiroft, southeastern Iran, 2017. *Int J Occup Environ Med* 2018;**9**:106-107. doi: 10.15171/ijoem.2018.1273

UV-A is categorized as a carcinogen by International Agency for Research on Cancer (IARC).[3] People working outdoor are at higher risk of being exposed to solar UV-A radiation.[4] Jiroft is an agricultural pole in the Southeast of Iran. Farmers working in this region are constantly exposed to noxious UV-A radiation. We conducted this study to determine the intensity of UV-A radiation during date harvest time in Jiroft, a city in southeastern Iran.

In this cross-sectional study, the intensity of UV-A radiation was measured on palm-grove workers around Jiroft. We randomly selected six gardens from different areas—AnbarAbad, Qaleh Ganj, Faryab, Jiroft, Roudbar, and Bolok. The mean UV-A radiation was measured from mid-July to mid-September (the date gathering season) five times a day (6:00–7:00, 7:00–9:00, 9:00–11:00, 11:00–13:00, and 13:00–14:00) with a Hagner digital radiometer (EC1 UV-A, Sweden). A suitable place for the measurement of UV-A was chosen based on worker station. For measuring scattered and reflected UV radiation, the detector was fixed horizontally 1 m above the ground, 10 m away from trees, where it was exposed to sunlight. Every measurement lasted 10 sec and the highest reading was used for the analysis.

The measured mean intensity of UV-A ranged from 4.10 (SD 2.9) to 25.30 (SD 1.7) W/m^2 at various places and times of the day. All the readings but those measured in early morning exceeded the permissible dosage set by the American Conference of Governmental Industrial Hygienists (ACGIH) (Fig 1).

Being exposed to a higher-than-permissible level of UV-A may lead to adverse effects, especially in children who help their parents during the harvest.[5] Using protective clothes and sunscreen creams would protect such adverse effects. Making shelters for workers and avoiding sunlight, whenever possible, would also be beneficial.[6]

Acknowledgments

We thank all officials of Jihad agriculture and palm-grove workers for their collaboration. This study was financially supported by Kerman University of Medical Science, Kerman, Iran.

Conflicts of Interest: None declared.

References

1. Worlth Health Organization. Global disease burden from solar ultraviolet radiation. Geneva, Switzerland, WHO, **2006**.
2. Lucas RM, Norval M, Wright CY. Solar ultraviolet radiation in Africa: a systematic review and critical evaluation of the health risks and use of photoprotection. *Photochemical & Photobiological Sciences* 2016;**15**:10-23.
3. Vernez D, Koechlin A, Milon A*, et al.* Anatomical UV exposure in French outdoor workers. *J Occup Environ Med* 2015;**57**:1192-6.
4. Godar DE. UV doses worldwide. *Photochemistry and photobiology* 2005;**81**:736-49.
5. Wright CY, Brogniez C, Ncongwane KP*, et al.* Sunburn risk among children and outdoor workers in South Africa and Reunion Island coastal sites. *Photochemistry and photobiology* 2013;**89**:1226-33.
6. Watanabe S, Ishii J. Effect of outdoor thermal environment on pedestrians' behavior selecting a shaded area in a humid subtropical region. *Building and Environment* 2016;**95**:32-41.