

# Pharmaceutical practice and selling of drugs during Ramadan

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Ramadan is a holy month where Muslims fast from sunset to sunrise. During the fasting days of Ramadan, glucose homeostasis is maintained by meals taken before dawn and by liver glycogen stores (1). Changes in serum lipids are variable and depend on the quality and quantity of food consumption and changes in weight (2). Increases in subjective sensations of fatigue, loss of sleep, or disruption of normal sleep have been reported as physiological changes during fasting in Ramadan (3–5). Also, fasting during Ramadan was reported to reactivate and aggravate gastrointestinal diseases, exacerbate migraines, and increase the circadian pattern of strokes (6–8). In Jordan, changes in the pharmaceutical practice and selling of drugs were recognized by many local pharmacy owners during Ramadan. However, there are no studies about it.

Four community pharmacies that are registered to sell more over-the-counter than prescribed drugs took part in the study. Selling data among different places in Amman-Jordan, regarding the sold drugs during Ramadan month and 1 month before Ramadan were collected during 10 July to 10 September 2010. Drugs were grouped according to their pharmacological classification. The average of selling for each group was calculated.

The data showed that pain killer drugs – especially paracetamol with caffeine – were the most sold drug (Table 1). In Ramadan, most people work during the daytime while fasting. Also, Ramadan fell in the summer season with high temperatures relative to previous years. It might be that dehydration was the main cause of headaches during the fast. In addition, it was reported that migraine attacks increased during the month of Ramadan (6). These factors might explain the increased sale of pain killer drugs during Ramadan. Paracetamol with caffeine is formulated to increase the absorption and give an extra effect and it is faster in onset of action as an analgesic than other pain killers like diclofenac sodium and ibuprofen (9).

Selling of antacid drugs, antihistamine-2, and proton pump inhibitors increased sharply during Ramadan. It might be due to changes in food habits by consumption

of heavy meals with high fat and sugar content after 12 h of fasting.

This study also noted an increase in the sale of pregnancy test kits in Ramadan compared to previous months during this year. Most of the results of these pregnancy tests were negative. In fasting, hormonal changes and imbalances were reported and regular menstrual cycles changed (10). This caused confusion for many women. On the other hand, norethisterone was sold in Ramadan in relatively higher amounts. This is because of religious issues where adult females cannot complete the fast during the menstrual cycle. Some females prefer to fast continually for the whole month. As a result, they use norethisterone to stop the bleeding and to continue fasting.

This study reported that amoxicillin 1,000 mg was preferable and sold more than amoxicillin 500 mg. The frequency of dose of amoxicillin 1,000 mg was twice daily after a meal while amoxicillin 500 mg was taken three times daily after a meal. In Ramadan, most Muslims eat two meals instead of three meals.

The present study concluded a difference in selling and pharmaceutical practice during Ramadan in comparison with other months. As a result, physicians and pharmacists should be informed about different pharmaceutical practice during Ramadan that might affect treatment outcome and the sale of drugs.

**Table 1.** The most common over-the-counter drugs sold in the Ramadan month 2010

Over-the-counter drug	Proportion of sold drug before Ramadan (%)	Proportion of sold drug in Ramadan (%)
Pain killers	31	43*
Antihyperacidity	7	18*
Pregnancy test kits	1	5*
Norethisterone	0.4	1.3*

\*Is significantly different, Z-test ( $P < 0.05$ ).

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