

# n-dur xr™ melatonin drink technology

## extended release of melatonin in powdered beverages for up to six hours\*

### the value of extended release

Melatonin is a hormone naturally produced by your body to control the sleep-wake cycle. For some individuals, their sleep-wake cycle is disrupted, and they have a hard time falling asleep and staying asleep. Taking a melatonin supplement may help promote restful sleep. Lifestyles may contribute to one's inability to achieve a restful sleep including those suffering from jet lag, those who do shift work or older adults who are naturally restless. Individuals who have a hard time falling asleep and staying asleep may need some additional support.

Extended release melatonin delivery maintains melatonin levels in the body over the course of the sleep cycle. This approach can help provide a more desirable and beneficial physiological response than a single dose of melatonin. Extended release in a powdered beverage form also provides the consumer a delivery format (i.e. beverage) which may be more acceptable than a tablet and powdered form can be more convenient than an RTD format.

### key features and benefits

- extends melatonin release up to 6 hours
- uses melatonin, non-habit forming
- easy-to-use powder form
- enhanced dispersibility
- cGMP compliant
- vegan and vegetarian
- kosher and halal certifications available

### suitable applications include:

- dry powder beverages
- sachets      ○ stick packs      ○ cannisters
- designed for dry powder applications but may also be used in capsules



### technology description

N-Dur XR™ drink technology uses a proprietary, patent-pending process and specialty ingredients to provide an extended release delivery system that can be formulated into teas and powdered beverages. The ingredient does not impart additional flavor so it can be easily combined with flavors and other ingredient and does not require taste masking. The extended release mechanism is robust and designed to release the melatonin only after dispersion. Dissolution profiles demonstrate the melatonin will release for up to 6 hours. (Figures 1 and 2)

### n-dur xr™ in application with melatonin

Ashland's N-Dur XR™ melatonin is easily customizable for flexible dosing options. N-dur XR™ Melatonin contains 50% melatonin. As an example, for 10mg targeted dose, you will need 20mg of N-dur XR™ Melatonin.

This statement has not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.

figure 1 – relative release profile in DI water

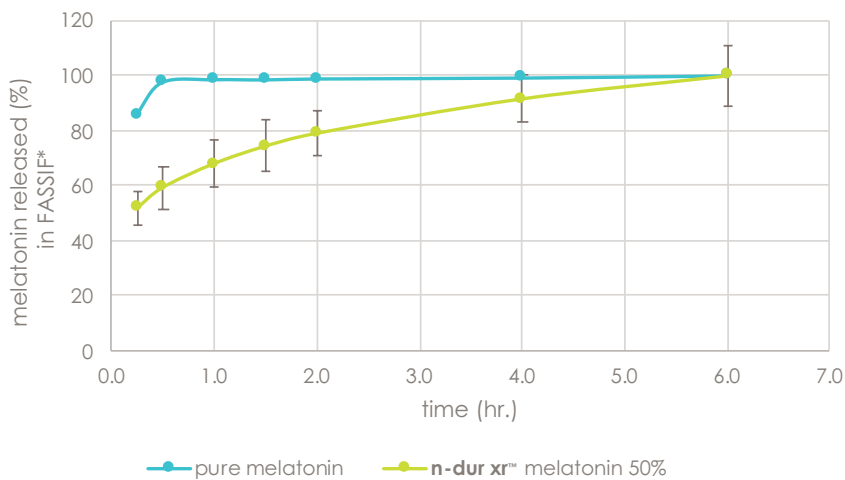
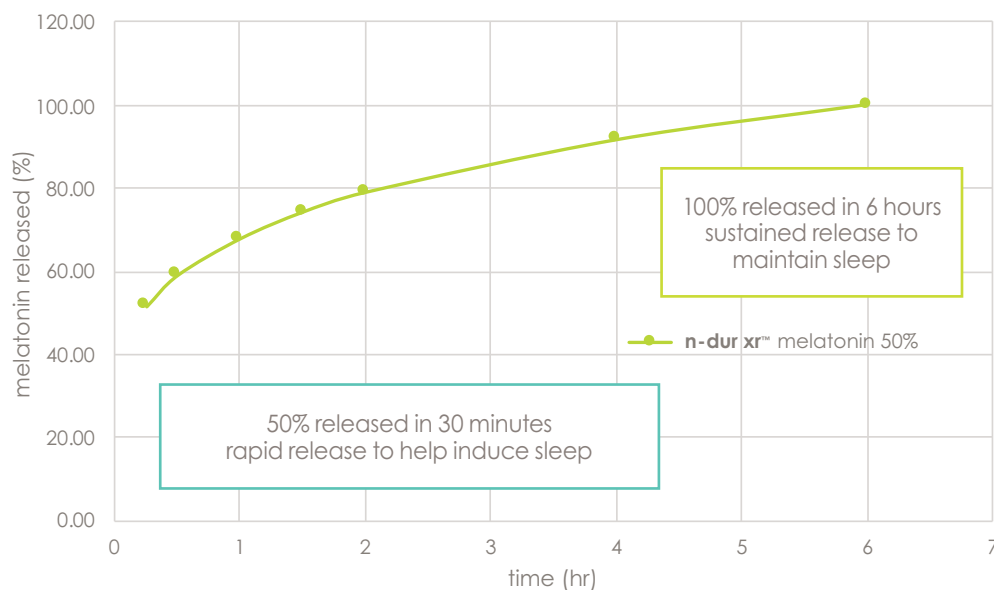


figure 2 – release profile in biorelevant media pH 6.5 (fasted state simulated gastrointestinal fluid)



Dissolution profile of Melatonin with N-Dur XR™ technology tracking Melatonin, for 6hr using FASSIF and tested in a USP Apparatus 1 (basket).

regional centers

**North America** —  
Kearny, NJ USA  
Tel: +1 800 526 0609  
+1 201 246 2000

**Europe** — Poland  
Tel: +48 22 607 25 33

**Europe** — Spain  
Tel: +34 932 064 195

**Middle East, Africa** —  
Istanbul, Turkey  
Tel: +90 216 538 08 00

**India** — Maharashtra  
Tel: +91 22 61489696

**Asia Pacific** — Singapore  
Tel: +65 6775 5366

**Latin America** — Mexico  
Tel: +52 55 52 76 6121

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