NutraREV™ – A New Way to Dry Military Ration Components

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Challenge:
- Ration Footprint Reduction
- Quality & Nutrient Stability
Vacuum Drying—
Water boils on 1 bar at 100°C, but if the pressure is lowered to 40 millibar (4 kPa), then it already boils at 28.96°C
Microwave heating--

- The microwave energy is mainly absorbed by liquid water present in food owing to its higher loss factor than other components
- The absorption of microwaves results in temperature rise, as some water is evaporated and the moisture level is reduced
- Internal heating and evaporation of liquid water takes place inside the food materials and generates significant pressure
- Water vapor is pumped to the surface due to the pressure gradient. The resulting pressure-driven flow becomes an additional mechanism of internal moisture transport
Dehydration curves of air dried (AD) and microwave vacuum dried (MVD) mushroom slices.

M. Gupta et al., 2014
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100 kW NutraREV system
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2 kW NutraREV system
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10 kW NutraREV system
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Scrambled Egg

Egg Omelet

Aw = 0.95

Rev partial dry

Aw = 0.80

Compression
NutraREV™ – A New Way to Dry Military Ration Components

Sonic Agglomeration

Compression

Drying & Forming

Sonic Horn

Anvil

Forming Chamber
NutraREV™ – A New Way to Dry Military Ration Components

Advanced Drying & Compression → Quickly Rehydrate

Low Weight-Volume, High Quality Nutritious Food Bars

Eat as is
Meeting Today’s Challenges...
Providing Tomorrow’s Solutions™