

AVAILABLE METHODS OF ANALYSIS FOR WATER

Available method of analysis	Limitation	Application
Physical removal of water (direct/indirect)		
Air oven*	Caramelization of sugars, degradation of unsaturated fat, loss of volatiles	This method is applicable to all foods at 60 °C. At 100 °C, it is applicable to all foods except those rich in fat and sugar
Vacuum oven*	Loss of volatiles	Applicable especially to foods rich in sugars
Freeze-drying*	Slow. Care must be taken to avoid residual water in samples	Applicable to most foods
Microwave oven	Charring	Applicable to medium- or high-moisture foods only
Dean & Stark distillation	Safety of solvents used	Applicable to foods high in volatiles
Chemical reactivity		
Karl Fisher		Applicable to low-moisture, hygroscopic foods
Physical methods		
Physical methods (NMR, NIR)	High cost and needs calibration for each food group	NMR is applicable to most foods. NIR is only established for cereals and some other foods
Chromatography (GLC, GSC)	High cost	GLC is applicable to meat and meat products only. GSC is applicable only to some meat products

NIR = near infrared reflectance; NMR = nuclear magnetic resonance; GLC = gas-liquid chromatography; GSC = gas-solid chromatography;
* = recommended method