

Germination was minimal at low temperatures whatever the pressure, but at high pressures germination occurred at temperatures well above those that supported germination at 1 atm. pressure (e.g. at 60° and 70°).

In general, those spores most dormant towards nutrient germinants at 1 atm. were

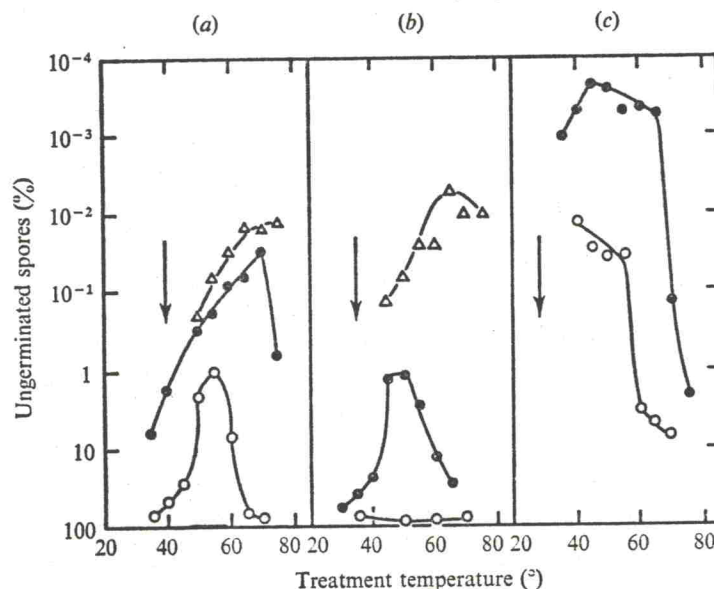


Fig. 1. Pressure germination at different temperatures. Spores of *Bacillus coagulans* (a), *B. subtilis* var. *niger* (syn. *globigii*) (b) and *B. cereus* τ (c) were heat activated at 70° for 30 min., then suspended in 0.1 M-sodium phosphate (pH 8.0) and subjected to pressures of 250 atm. (○), 500 atm. (●) and 1000 atm. (△) for 30 min. periods. The germination was measured by heating samples (70°, 30 min.) to kill germinated forms and estimating the numbers of ungerminated survivors by viable counting. The vertical arrows indicate the temperature optima for germination of these spores by L-alanine at 1 atm. pressure.

Table 1. Increase in pressure germination of heat-activated spores

Organism	Pressure (atm.)	Time (min.)	Germination (%)*	
			Unactivated spores	Activated† spores
<i>Bacillus cereus</i> τ	250	30	60	95
		5	—	10
		15	—	50
	1000	30	75	99
		0.25	20	40
		30	>99	>99
<i>B. subtilis</i> MARBURG	250	30	30	60
<i>B. brevis</i>	250	30	0	99
<i>B. coagulans</i>	1000	30	20	80
<i>B. subtilis</i> var. <i>niger</i> (syn. <i>globigii</i>)	1000	30	60	90
<i>B. pumilis</i> s3	1000	30	80	>99

* Incubation temperature was 25°. Spores were suspended in 0.1 M-sodium phosphate (pH 8.0). Germination was estimated by counting the percentage of phase-dark spores: incubated but not pressurized controls were all less than 5% phase-dark.

† Activation was at 70° for 30 min.