McCARTHY AGAR

INTENDED USE
Remel McCarthy Agar is a solid medium recommended for use in qualitative procedures for the selective isolation and presumptive differentiation of *Gardnerella vaginalis*.

SUMMARY AND EXPLANATION
Gardner and Dukes first isolated *G. vaginalis* from women with nonspecific vaginitis in 1955.[1] Dunkelberg et al. developed peptone starch dextrose (PSD) agar which, unlike previously described media, did not contain blood.[2] Smith modified PSD by adding a pH indicator to the medium, allowing detection of *G. vaginalis* by production of acid from starch.[3] In 1977, Mickelsen et al. modified Smith's formulation by addition of 1% cornstarch, which makes the medium opaque.[4] Colonies of *G. vaginalis* are characterized by zones of clearing that appear around the colonies, presumably because of an ability to solubilize large aggregates of cornstarch.

PRINCIPLE
Casein and meat peptones supply nutrients necessary to support bacterial growth. Phosphate buffer controls pH changes that may occur as result of amine production. Sodium chloride maintains osmotic equilibrium. GCHI Enrichment is a defined supplement which provides vitamins, amino acids, coenzymes, and other factors that stimulate growth. Colistin and nalidixic acid are selective agents, inhibitory to most *Enterobacteriaceae.* Cornstarch neutralizes fatty acids that may be toxic to *G. vaginalis* and is the fermentable substrate in this medium. *G. vaginalis* is recognized by zones of clearing in the opaque medium around the colonies.

REAGENTS (CLASSICAL FORMULAE)*

Cornstarch	11.0 g	Monopotassium Phosphate	1.0 g
Casein Peptone	7.5 g	Colistin	10.0 mg
Meat Peptone	7.5 g	Nalidixic Acid	10.0 mg
Sodium Chloride	5.0 g	●GCHI Enrichment	5.0 ml
Dipotassium Phosphate	4.0 g	Agar	12.0 g
		Demineralized Water	1000.0 ml

pH 7.2 ± 0.2 @ 25°C

●GCHI Enrichment:

Glucose	100.0 g	Cocarboxylase	0.1 g
Cysteine Hydrochloride	25.9 g	Guanine Hydrochloride	0.03 g
L-Glutamine	10.0 g	Ferric Nitrate	0.02 g
L-Cystine	1.1 g	ρ-Aminobenzoic Acid	0.013 g
Adenine	1.0 g	Vitamin B12	0.01 g
NAD	0.25 g	Thiamine Hydrochloride	0.003 g
		Demineralized Water	1000.0 ml

*Adjusted as required to meet performance standards.

PROCEDURE
1. Inoculate and streak the specimen as soon as possible after it is received in the laboratory.
2. If the material is being cultured directly from a swab, roll the swab over a small area of the agar surface and streak for isolation.
3. Incubate plates in 5-10% CO_2 at 33-37°C for up to 48 hours.
4. Examine plate daily for typical colony morphology. On McCarthy Agar, colonies of *G. vaginalis* are surrounded by zones of clearing due to the hydrolysis of cornstarch.

QUALITY CONTROL
All lot numbers of McCarthy Agar have been tested using the following quality control organisms and have been found to be acceptable. Testing of control organisms should be performed in accordance with established laboratory quality control procedures. If aberrant quality control results are noted, patient results should not be reported.

CONTROL	INCUBATION	RESULTS
Gardnerella vaginalis ATCC® 14018	CO_2, up to 48 h @ 33-37°C	Growth, zone of clearing around colonies
Escherichia coli ATCC® 25922	Aerobic, 18-24 h @ 33-37°C	Inhibition (partial to complete)
Proteus mirabilis ATCC® 12453	Aerobic, 18-24 h @ 33-37°C	Inhibition (partial to complete)

LIMITATIONS
1. Some *Streptococcus* spp. may hydrolyze cornstarch on McCarthy Agar. Additional tests are required for presumptive identification of *G. vaginalis* including, a Gram-stain demonstrating characteristic morphology (i.e., gram-positive, gram-negative, or gram-variable coccobacilli), beta-hemolysis on human blood agar, and negative catalase and oxidase.[7]
2. Obligately anaerobic strains of *G. vaginalis* have been reported; however, studies have demonstrated that anaerobic isolates occur with such infrequency that routine anaerobic incubation of genital cultures is unwarranted.[6]

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Refer to the front of Remel *Technical Manual of Microbiological Media* for **General Information** regarding precautions, product storage and deterioration, specimen collection, storage and transportation, materials required, quality control, and limitations.

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