ditions, and found that (1) the pH (2) the concentration of reagents and (3) the impurity play significant role as habit modifiers. The concentrations of outer and inner electrolytes in this case were tremendously decreased and tabular forms of the uniform crystals, almost the same size were found throughout the gel medium. Figures 1–4 represent the types of platelets formed.

Shape imparted to a crystal by the relative development of its various faces is referred to as habit. A crystal may be considered to have undergone a change of habit of face; one or more forms disappear or appear or if their relative sizes change in response to a change in the growth parameters. Barium molybdate system comes under the scheelite group[4], which therefore assumes the habit and morphology of the tetragonal system. The forms of tetragonal system are far less numerous than those of isometric. Common tetragonal mineral habits are square prisms, square prisms with pyramids, or bipyramidals. Tetragonal bipyramidal form is the ideal shape of $BaMoO_4$ crystals, and tabular form is a closed form of tetragonal system defined by (001) and (011) faces. Platelet or tabular forms of crystals are very useful for various scientific equipment and applications. Tabular habit indicates[4] strong periodic bond chains, parallel to two or more directions and its growth conditions are governed by low supersaturation. In the present case also the tabular forms are grown under low super saturation. Hence role of concentration of reacting solution as habit modifier is quite relevant in the present case also.

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OCCURRENCE OF *AZOTOBACTER CHROOCOCCUM* IN *POTHOS SCANDENS*

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In this note we report the intracellular detection of *Azotobacter chroococcum*, a free-living nitrogen fixer in *Pothos scandens*, commonly known as the money plant which can grow in plain water.

After initial cleaning of different plant parts with cotton using sterile distilled water containing a natural detergent like soap-nut, subsequent surface disinfection was achieved by rubbing the surface quickly with cotton swab soaked in 75% ethanol.

When transverse sections were observed under light microscope, parenchymatous cells of the cortex, especially those near the central and peripheral vascular bundles were found to be teeming with microbial cells whose movement was arrested on addition of 75% alcohol or 0.1% $HgCl_2$ from the side of the cover glass. Morphologically they appeared coccoidal in nature occurring singly and in pairs. Sections from leaf, stem and root showed similar types of bacteria.

After surface disinfection, different plant parts were macerated in sterile saline using glass powder. The homogenate obtained was streaked over nitrogen-free Ashby's mannitol agar, yeast extract mannitol agar and reinforced clostridia agar[1]. Petriplates inoculated with 2–3 loopfuls revealed characteristic colourless pure gummy colonies almost covering the whole of the plate of Ashby's mannitol agar.

The bacterium appeared to be a capsulated, non-sporulating, aerobic, motile, gram negative ovoid to rod shaped bacterium. Colonies were found to be raised, medium size, round, smooth, colourless, transparent, with the entire edge and mucoid in nature. An isolate was found to utilize glucose, mannitol, sucrose and starch but not rhamnose. Additionally, this isolate was found to be urease and catalase-positive. Following Bergey's Manual[2], the isolate has been identified as a variant of *A. chroococcum*.

Aerial clinging roots were relatively rich in *Azotobacter* (3 to 6×10^4 cells/mg the fresh tissue) while the apical leaf, lateral leaf, stem and root had fewer cells (2 to 6×10^2 cells/mg the fresh tissue).

When fresh apical leaves and aerial clinging roots were checked for their acetylene reduction capacity[3], leaves and roots showed ethylene in the range of 4–12 and 7–10 nmol of C_2H_4/hr/g of fresh weight respectively. Nitrogenase activity of isolated *Azotobacter*

grown under aerobic condition in nitrogen-free medium was found to be 25 nm/hr/mg of protein.

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EVALUATION OF SOME ANTI-CHOLESTEROL AND ANTI-INFLAMMATORY DRUGS FOR MUTAGENICITY USING *BACILLUS SUBTILIS* HCR-9 MULTIGENE SPORULATION TEST

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NUMEROUS screening tests using a variety of genetic indicator organisms have been developed to identify potential chemical mutagens. The multigene sporulation test[1] involving about 40–60 genes, detects foward mutations which are readily identified by their lack of brown pigment which normally accumulates in sporulating colonies[2–5].

In the present study the mutagenic effect of two anticholesterol drugs *viz* clofibrate (2,4-chlorophenoxy-2-methyl proponoic acid ethyl ester) and its calcium analog and four anti-inflammatory drugs *viz* tromaril (N-beta phenyl ethyl anthranilic acid), brufen (2,4-isobutyl phenyl proponic acid), phenylbutazone (4-butyl-1,2-diphenyl-3,3-pyrazolidinedione) and indomethacin (1-para chlorobenzyl 5-methoxy 2-methyl 3-indolylacetic acid) were evaluated using *Bacillus-subtilis* multigene sporulation test. MNNG (N-methyl N-Nitro N-nitroso guanidine) a known mutagen was used as the positive control.

Bacillus subtilis hcr-9 was inoculated in Arret and Kirshbaum medium[7] and spore stocks of about 10^{10} spores/ml were prepared[1,6]. Seventy μl were taken in Spizizen medium[8] supplemented with DL tryptophan. Each test compound was evaluated by adding 10 μl of various concentrations (10–100 μl/ml) by employing standard test procedure[11] in the presence and absence of S_9 mix[9,10]. Statistical analysis was done using Kastenbaum and Bowman[12] tables.

The results show that only clofibrate exhibited a marginal significant increase in the percentage of mutants *i.e.*, 0.16 to 0.18 % at higher concentrations of

Table 1 *Mutagenicity of anti-cholesterol and anti-inflammatory drugs on sporulating genes of B. subtilis hcr-9*

		In absence of S_9 mix			In presence of S_9 mix		
Durg	Cencentration μg/ml	Total colonies scored	Total mutants observed	% of mutants	Total colonies scored	Total mutants observed	% of mutants
Control	0	8826	3	0.03	9004	3	0.03
1. Clofibrate	10–40	19523	11	0.06	19168	12	0.06
	60	9785	9	0.09	9286	11	0.12
	80	10026	13	0.13*	9482	12	0.16*
	100	9229	14	0.15*	9095	16	0.18*
2. Clofibrate (ca-salt)	10–100	59618	39	0.07	59329	44	0.08
3. Tromaril	10–100	61071	29	0.05	60343	37	0.06
4. Brufen	10–100	55639	24	0.04	55475	23	0.04
5. Phenylbutazone	10–100	54445	34	0.06	53412	41	0.08
6. Indomethacin	10–100	51628	22	0.04	51989	24	0.05

Note:
1. Dimethyl sufloxide was used for controls as the durgs were dissolved in this solvent.
2. Similar results for controls obtained in repeated experiments.
3. *Significant increase in mutants.
4. Total wild type colonies and mutant colonies obtained at the concentrations of 10, 20, 40, 60, 80 and 100 μg/ml were pooled and average percentage was calculated as the above drugs gave insignificant results except clofibrate which produced significant mutants at higher concentrations.