

## BACILLUS PUMILIS BAKTERIYALARI MIKROBIOLOGIK TAHLILI VA BIOTEKNOLOGIYADAGI AHAMIYATI.

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**Annatotsiya:** *Bacillus pumilis* BA06 juda ko`p mezofil fermentlarning ishlab chiqaruvchisi hisoblanadi va bu uning sanoat mikrobiologiyasidagi ahamiyati sezilar darajada oshirib beradi. Tibbiyot sohasida *Bacillus avlodi* shtammlarining ishlab chiqarilgan oqsillari dori vositalariga teng baholanmoqda. Yigirma yillar oldin Rossiyada trombovazim fermenti olindi va u miokard infarktida qo`llanila boshladi. *Bacillus subtilis subtilase* shtammi esa ushbu fermentni ishlab chiqara olishi aniqlandi.

**Kalit so`zlar:** *Bacillus pumilis*, *Bacillus subtilis subtilase*, *Bacillus amyloquefaciens*, *Bacillus licheniformis*, *Bacillus thuringiensis*.

**Kirish:** *Bacillus pumilis* BA06 juda ko`p mezofil fermentlarning ishlab chiqaruvchisi hisoblanadi va bu uning sanoat mikrobiologiyasidagi ahamiyati sezilar darajada oshirib beradi. Tibbiyot sohasida *Bacillus avlodi* shtammlarining ishlab chiqarilgan oqsillari dori vositalariga teng baholanmoqda. Yigirma yillar oldin Rossiyada trombovazim fermenti olindi va u miokard infarktida qo`llanila boshladi. *Bacillus subtilis subtilase* shtammi esa ushbu fermentni ishlab chiqara olishi aniqlandi. Fermentlarni, turli oqsil moddalarni, biologik aktiv moddalarni olish uchun sharoitning yetishmasligi ushbu moddani siztezlovchi bakteriyalarni izlashga olib keldi. Natijada, *Bacillus subtilis* WB600, *Bacillus subtilis* QK-1, *Bacillus subtilis* TP-6, *Bacillus subtilis* DC33, *Bacillus subtilis* LD-8547, *Bacillus subtilis* A26, *Bacillus subtilis* BAF1, *Bacillus subtilis* BL21, *Bacillus subtilis* PTCC, *Bacillus amyloquefaciens*, *Bacillus subtilis* ICTF-1, *Bacillus cereus* SRM-001, *Bacillus pumilis* 7P, *Bacillus subtilis* C10, *Bacillus velezensis* BS2 kabi ko`plab *Bacillus* avlodi shtammlari topilishiga va qo`llanilishiga olib keldi.

*Bacillus licheniformis* ko`p sonli mavjud va potentsial maqsadlarda, jumladan, akvakultura, qishloq xo`jaligi, oziq-ovqat, biotibbiyot va farmatsevtika sanoati kabi keng sohalarda qo`llaniladigan bioaktiv birikmalar ishlab chiqarishda yuqori biotexnologik ahamiyatga ega bakterial turlarni hosil qiluvchi gramm musbat bakteriyadur. Bundan tashqari, probiyotik sifatida keng qo`llanilishidan tashqari, *B. licheniformis* shtammlarining boshqa biotexnologik qo`llanilishiga quyidagilar kiradi: bioflokulyatsiya, biomineralizatsiya, bioyoqilg`i ishlab chiqarish, tibbiyotda.

Olimlar *B. licheniformis*ni toksikogen potentsial yo'qligi sababli butun dunyo bo'ylab ozuqa qo'shimchasi sifatida qo'llashni ma'qullagan bo'lsa-da, bu bakteriyani o'z ichiga olgan ba'zi probiyotiklar antibiotik genlarining o'tkazilishi mumkinligi sababli xavfli hisoblanadi. Ushbu turning biologik faolligi va genetik xususiyatlarining keng o'zgaruvchanligi uning biotexnologik potentsialini baholash uchun yangi shtammlarni tavsiflash uchun aniq yo'riqnomlar belgilab olishni tavsiya etadi.

### **Mavzu yuzasidan adabiyotlar tahlili:**

Atrof-muhitning neft uglevodorodlari, asosan neftni qayta ishlash zavodlarining xom neft chiqindilari bilan ifloslanishi butun dunyoda keng tarqalgan. Ushbu tadqiqot xom neft chiqindilari bilan ifloslangan suvning bioremediatsiyasini o'rganadi. *Bacillus salamalaya 139SI* bakteriyasi Malayziyaning Kuala Selangor shahridagi xususiy qishloq xo'jaligi tuproqlaridan ajratib olingan bakteriya xom neft chiqindilarining potentsial degradatsiyasi bo'lishi aniqlandi. 108 CFU ml-1 mikroorganizm populyatsiyasi ishlatilganda, 139SI shtammi 2% va 1% xom neft chiqindilarini o'z ichiga olgan mineral tuz muhitida 42 kunlik inkubatsiyadan so'ng jami neft uglevodorodlarining 79% va 88% ni buzdi. optimal sharoitlar. 1% xom neft chiqindilarini o'z ichiga olgan emlanmagan muhitda 6% degradatsiyaga uchradi. Nazoratga nisbatan, 1% moy bilan ifloslangan muolajalarga 99 x 108 CFU ml-1 bakteriyalar soni qo'shilsa, buzilish sezilarli darajada kattaroq bo'ldi. Shunday qilib, bu izolyatsiya qilingan shtamm oqava suvlarda neftning biotazalanishini yaxshilash uchun foydalidir. Atrof-muhitning neft uglevodorodlari, asosan neftni qayta ishlash zavodlarining xom neft chiqindilari bilan ifloslanishi butun dunyoda keng tarqalganligi kabi muammolarni hal etadi.

### **Natija va muhokama:**

Taxminan bir asr oldin kashf etilganidan beri *Bacillus thuringiensis* maqsadli hasharotlarga nisbatan o'ziga xos zaharligi, ifloslantiruvchi qoldiqlarning yo'qligi va maqsadli bo'lmagan organizmlar uchun xavfsizligi tufayli qishloq xo'jaligi, o'rmon xo'jaligi va chivinlarga qarshi kurashda biopestitsid sifatida ishlatilgan. Bugungi kunda *Bacillus thuringiensis* eng muvaffaqiyatli tijorat mikrobial insektitsid bo'lib, biopestitsidlar bozorining qariyb 90% ni tashkil qiladi. Ushbu bakteriyaning insektitsid xususiyatlari odatda sporulyatsiya paytida hosil bo'ladigan kristallar deb ataladigan insektitsid oqsillari mavjudligi bilan bog'liq. Biotexnologiyaning yangi vositalari olimlarning qishloq xo'jaligidagi muammolarni hal qilish usullarini o'zgartirmoqda. *Bacillus thuringiensis*ning pestitsid genlarining keng doirasini o'z ichiga olgan transgenik texnologiya qishloq xo'jaligi biotexnologiyasi stsenariysida ustunlik qiladi. Shu bilan birga, *Bacillus thuringiensis* texnologiyasi ham qishloq xo'jaligi biotexnologiyasining eng qattiq tanqid qilinadigan sohasi hisoblanadi. Yangi biopestitsidlarni ishlab chiqish uchun *Bacillus thuringiensis* shtammlarini genetik jihatdan takomillashtirish ularning maqsadli hasharotlarga qarshi ta'sirini oshirishni, o'simliklarning maxsus qo'llanilishi uchun insektitsid spektrini

kengaytirishni, o'simliklarning chidamliligini yaxshilashni va fermentatsiya ishlab chiqarishni optimallashtirishni talab qiladi.

#### Xulosa:

Aytish mimkinki, Basillus avlodi shtammalri bugungi kunda mikrobiologiya, biotexnologiya va judayam ko'plab sohalarda o'zing yuksak potensioaliga ega.

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