

SUMMARY

Probiotics mean live microorganisms that have advantageous effects on the health of host. The aim of current study was to isolate probiotic bacteria from different dairy products. A total of 35 samples were collected from different stores. All of these were characterized on the basis of morphological and biochemical tests.

To verify the probiotic potential of bacteria present in different dairy products, acid tolerance, bile tolerance and NaCl tolerance tests were performed. It was determined that bacterial isolates *i.e.*, GCU-DAB-M-6, GCU-DAB-M-9, GCU-DAB-M-10, GCU-DAB-M-11, GCU-DAB-M-12, GCU-DAB-M-14, GCU-DAB-M-15, GCU-DAB-M-16, GCU-DAB-M-17, GCU-DAB-M-18, GCU-DAB-M-22, GCU-DAB-M-27, GCU-DAB-M-33 and GCU-DAB-M-35 showed maximum tolerance against acid and NaCl. Bacterial isolates *i.e.*, GCU-DAB-M-9, GCU-DAB-M-10, GCU-DAB-M-11, GCU-DAB-M-22, GCU-DAB-M-27, GCU-DAB-M-33 and GCU-DAB-M-35 showed significant growth in 1-4% (w/v) concentration of bile salts.

Antibiotic sensitivity was determined for the bile tolerant bacterial isolates. GCU-DAB-M-9 was resistant against amoxicillin, gentamicin, ciprofloxacin and cefixime. However it was not resistant against pencillin and erythromycin. GCU-DAB-M-11 was resistant against amoxicillin, erythromycin, gentamicin, ciprofloxacin and cefixime but did not show resistance against pencillin. GCU-DAB-M-22, GCU-DAB-M-27, GCU-DAB-M-33 and GCU-DAB-M-35 were resistant against all the antibiotics used *i.e.*, amoxicillin, pencillin, erythromycin, gentamicin, ciprofloxacin and cefixime.

Antibacterial activity of isolates showed that isolates *i.e.*, GCU-DAB-M-9, GCU-DAB-M-11, GCU-DAB-M-22, GCU-DAB-M-27, GCU-DAB-M-33 and GCU-DAB-M-35 showed clear zone of inhibition. They were resistant against the pathogens (*Staphylococcus sp.*, *Proteus sp.* and *E. coli*).

Subsequent genetic level identification of the 4 selected bacterial isolates *i.e.*, GCU-DAB-M-11, GCU-DAB-M-22, GCU-DAB-M-33 and GCU-DAB-M-35 was done.

Therefore GCU-DAB-M-11, GCU-DAB-M-22, GCU-DAB-M-33 and GCU-DAB-M-35 strains were subjected to 16S rRNA sequencing for their species level identification. Based on 16S rRNA sequencing nucleotide homology and phylogenetic analysis, the isolates GCU-DAB-M-11, GCU-DAB-M-22, GCU-DAB-M-33 and GCU-DAB-M-35 were confirmed to be *Lactobacillus delbruckeii* spp. *bulgaricus*, *Bifidobacterium infantis*, *Lactobacillus acidophilus* and *Lactobacillus paracasei* as showing 100% similarity to *Lactobacillus delbruckeii* spp. *bulgaricus*, *Bifidobacterium infantis*, *Lactobacillus acidophilus* and *Lactobacillus paracasei* respectively.

These characterized bacteria could be helpful for the human immune system, allergic resistance, and other digestive processes and their role as additive in dairy products.