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India. It was maintained as broth and agar cultures in Brain Heart Infusion medium at 37°C.

Production and puri cation of native pediocin CP2

P. acidilactici MTCC 5101 was grown overnight in MRS broth; pH 6.5 at 370C. Native pediocin CP2 was puri ed by conventional method of adsorption-desorption [11]. Bacteriocin preparation was then lter sterilized using Millipore 0.45 mm lters [12].

Pediocin activity aasay

Bacteriocin activity in native and recombinant cell cultures can also be determined using spot-on-lawn assay [13]. It was carried out by spotting 5 µl CFS or dilutions of pure bacteriocin preparations on MRS bottom agar plates overlaid with 3-4 ml TGE so agar containing 6 log units of *L. monocytogenes*. Plates were incubated at 370C for 24 h and inhibition zones were scored. Bacteriocin titre was expressed as reciprocal of the highest dilution showing a de nite zone of inhibition or cell lysis in the resultant lawn culture.

Production and puri cation of recombinant pediocin CP2

Recombinant pediocin was expressed using T7 driven pET32(b)-

tissues were fed with the fresh medium. Cell counts were taken using haemocytometer. A er the required exposure time, MTT assay was carried out to determine overall cell viability.

MTT cell viability assay

e MTT (3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyl tetrazolium bromide) assay was carried out according to the protocol given by Shashi et al. [15]. Viability of the cells exposed to bacteriocin, was measured as a 7 /TT(ac)-[(a)-77(p)12(r)13(o)(exp)-7(p)12(i)-71(t)--7(p)n[(a)-20(o)12(-)-2 O3(w)D2(2327(6(4)–)51(6(4)O3(w)D2m)]12.839 061 Td5(-412d5(102(13(w

DNA fragmentation assay

Fragmentation of the genomic DNA was studied in the most

in the treatment of cancers especially of Hodgkin disease and germinal cancers for more than 30 years [22]. Pyocins F and S produced by *Pseudomonas aeruginosa* show structure homology with bacteriophage tails [23]. Antineoplastic activity of pyocin has been established against mouse hepatocarcinoma and lymphoblastic leukemia using HepG2 and Im9 cell lines, whereas human fetal foreskin broblast was una ected [24]. Its uptake is possibly mediated by iron-related receptors in bacterial cells [25] and transferrin receptors in mammalian cells [26]. is mechanism is reinforced by the fact that iron deprivation stops cell division in G1/S and leads to apoptosis in some neoplasic cell lines [27]. However, detailed *in vivo* investigation is required on potential use of pediocins as therapeutic agents or prophylactic compounds.

Carl Vogt [28] described the principle of apoptosis which shows it as a programmed death of cells, which may occur even in multicellular organisms. Various biochemical changes such as cell membrane damage, cell shrinkage, nuclear fragmentation, chromatin condensation and genetic DNA fragmentation take place during apoptosis. DNA fragmentation takes place at the end of apoptosis, which includes activation of calcium and magnesium dependent nucleases that degrade genomic DNA of susceptible cells. Currently used anticancer drugs have been shown to induce apoptosis in susceptible cells [29]. Nuclear DNA of cells that have entered in the phase of apoptosis shows a characteristic ladder pattern of oligonucleosomal fragments, which is regarded as the hallmark of apoptosis [14]. A series of studies have provided convincing evidence suggesting that the antimicrobial peptides or bacteriocins produced by lactic acid bacteria inhibit growth of cancer cells [30]. Inhibition of cell proliferation by colicins [17], microcin [18], pediocin [19] and pyocin [20] has been established in breast carcinoma, breast adenocarcinoma, ostreosarcoma, leiomyosarcoma, brosarcoma, T cell lymphoma, cervix carcinoma, Burkitt lymphoma, pulmonary carcinoma, colon adenocarcinoma, lymphoblastic leukemia, and hepatocarcinoma.

e results presented here indicate cytotoxic e ect of rec-pediocin on various cancerous cell lines tested in the study. e cytotoxic e ect on cancerous cells from human origin was also reported earlier [31]. e uniqueness of the bacteriocins lies in their interaction with the cell surface without penetrating the target cells, yet a ecting cell division and DNA synthesis [32]. Bacteriocins are highly speci c in their membrane interaction which is related to the unique receptors found in di erent bacterial species or types [33]. Preliminary experiments with rec-pediocin have shown its cytoxicity against cancerous cell lines and which is attributed through the induction of programmed cell death or apoptosis. In future, this information could be integrated and exploited to fully explore the suitability of rec-pediocin as *in vivo* therapeutics.

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