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Leptin Gene Inhibitor Using Curcumin Potency with Silibinin (Cur-Sil) Modified Magnetic Nanoparticles (Fe_3O_4) [Poly(Ethyelene Caprolactone)- Poly (Ethyelene Glycol) (PCL-PEG)] Co-polymer in Lung Cancer Management

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Aims

- Leptin, an adiposity-derived cytokine, plays a role in the carcinogenesis of lung cancer.
- In vitro and in vivo studies have shown that curcumin, a combination of silibinin based on PCL-PEG modified magnetic nanoparticles, has great potential in the treatment of lung cancer.
- The purpose of this study was to describe the potential of Silibinin (Cur-Sil)-Loaded Combination Curcumin Modified Magnetic (Fe3O4) Nanoparticles [Poly(Ethylene Caprolactone) -Poly(Ethylene Glycol) (PCL-PEG)] Copolymer as Leptin Gene Inhibitor in Cancer Management Lungs.

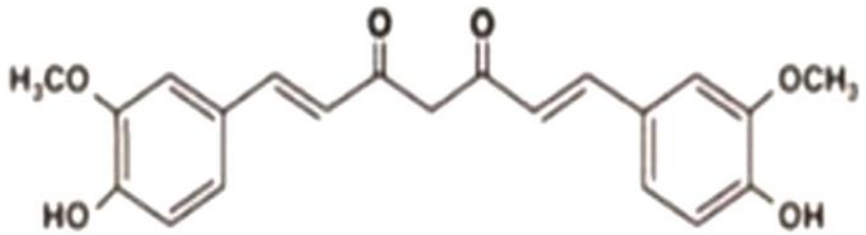
Methods

The method studied is a narrative method by grouping journal article data, the extraction results are the same as the results measured to answer the objectives whose sources have been tested for validity, relate to each other, and support the description or analysis of the discussion.
Materials include published research journals on Lung Cancer, Curcumin, Silibinin, Magnetic Nanoparticles (Fe3O4), Polyethyle ne-Caprolactone (PCL), and Polyethylene-Glycol.

Results

Curcumin and silibinin are natural herbal components with multitargeted anticancer properties.

A



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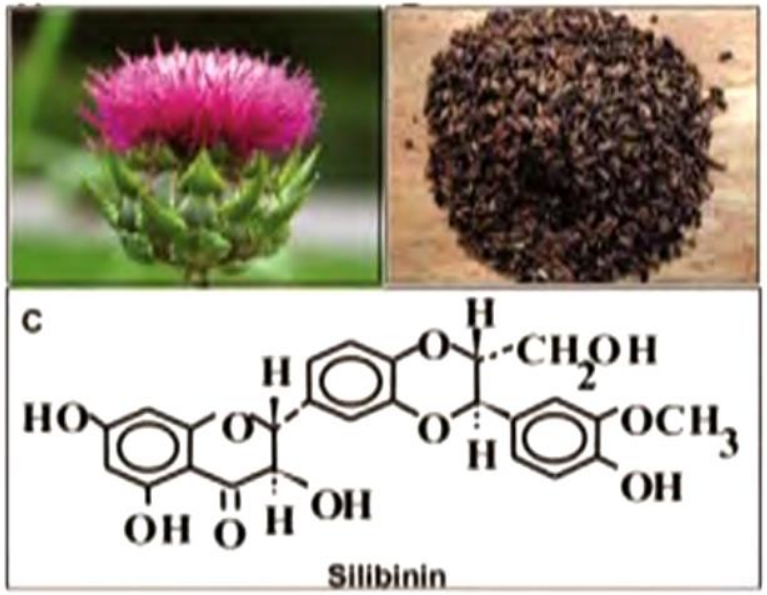
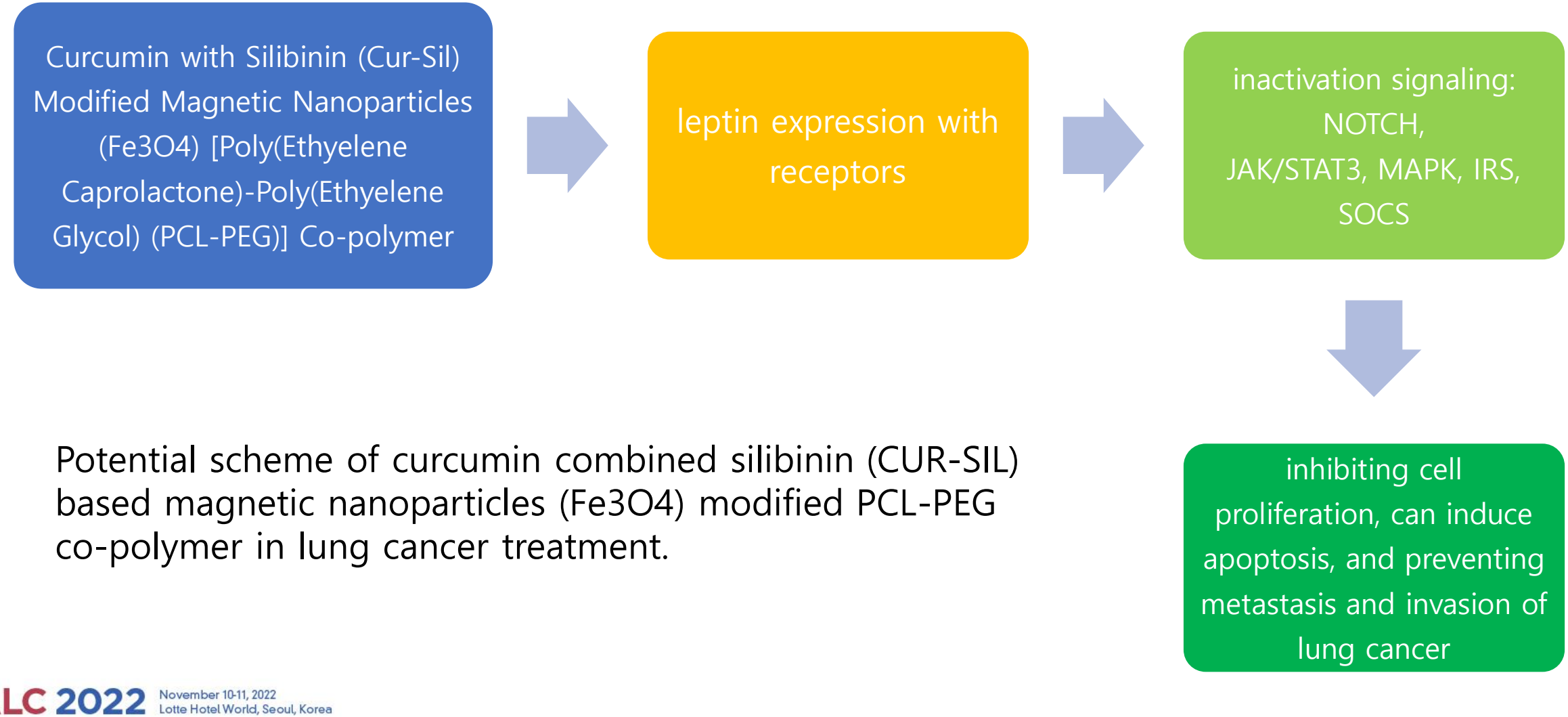


Results

- ⇨ The combination has the disadvantage of minimal dosage because natural herbal compounds have a hydrophobic structure with low water solubility.
- ⇨ Overcoming the weakness, a drug delivery system based on nanoparticle technology is applied as a nano-delivery of curcumin and silibinin compounds (Cur-Sil) to cancer targets with appropriate special features.
- ⇨ Silibinin can act as a bioenhancer, and can also act as a spec ific inhibitor of the leptin gene, making it synergistic with curcumin with higher pharmacological effects.

Results



Potential scheme of curcumin combined silibinin (CUR-SIL) based magnetic nanoparticles (Fe3O4) modified PCL-PEG co-polymer in lung cancer treatment.

Results

- In vitro and In vivo studies have shown that curcumin combined with silibinin encapsulated PCL-PEG modified magnetic nanoparticles has great potential in the treatment of lung cancer.
- The combination has a higher inhibitory effect on LEP gene expression than the combination of curcumin and silibinin without nanocarriers,
- The advantages of PCL-PEG modified magnetic nanoparticles in carrying the active compounds curcumin and silibinin as specific inhibitors of leptin expression, include good chemical stability in water, biodegradability, biocompatibility, good targeting of lung cancer cells, and no toxicity.

Conclusions

- Pharmacology of curcumin and silibinin encapsulated magnetic nanoparticles based on modified PCL-PEG copolymer as an effective inhibitor of leptin expressio n without toxicity to normal tissues.
- This finding can be used as an alternative treatment and become the latest therapeutic modality for lung cancer.