1H-PYRROL-3(2H)-ONE SCAFFOLD FOR THE DESIGN OF MULTIMODAL DIAGNOSTIC PROBES AND THERAPEUTIC AGENTS

IITM Technology Available for Licensing

PROBLEM STATEMENT

- In the prior arts literatures, it is known that **hydrozen sulfide (H_2S)** detection & quantifications have relied mainly on its reactivity as a nucleophile or as a reductant.
- Metal sulphide formation with concomitant formation of an emissive compound from a pre-fluorophore is another approach.
- Though fluorescence-based methods are reliable, emission of many of these probes get affected in presence of proteins such as albumin, which could lead **to errors during quantifications** & various solutions discussed which results unsatisfactory in terms of different parameter detection & quantification
- Hence, there is a requirement of an efficient solution to address the above issues.

TECHNOLOGY CATEGORY/ MARKET

Technology: Diagnostic Probe/Sensors
Industry: Pathology based Instruments, Pharmaceutical; **Applications:** Instrument for cancer detection;
Market: The global **cancer** diagnostic market was valued at $135.16B in 2022, projected to reach **$258.54B** by **2030**, growing at a CAGR of **8.4%** from **2022** to **2030**.

TECHNOLOGY

- Patent subject matter talks about **diagnostic and therapeutic** applications of **1H-pyrrol-3(2H)-one derivatives.**
- The **1H-pyrrol-3(2H)-one core** is suitably derivatized to act as a **chemical probe** for **selective detection & quantification** of the **gasotransmitters** such as **hydrozen sulfide**.
- The subject invention provides **multimodal detection** through characteristic **"turn-on" fluorescent output** and **Raman signals** possible by using proper response groups**.**
- More specifically, the use of compounds of the general structure **I**, which comes under general structure **IV**, as **chemical probes** for the selective detection and quantification of an analyte such as H_2S in various samples such as **blood plasma**. And the concentration of said probe used, can be **10 µM to 200 µM** in blood plasma.

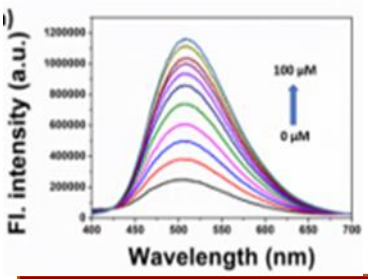

Figure shows Fluorescence spectral responses of probe 6(100µM) to different concentrations of Na_2S

KEY FEATURES / VALUE PROPOSITION

❖ ***Technical Perspective:***

Claimed Patent provides a diagnostic apparatus, for detection & quantification of H_2S, which **ensures high level of selectivity** & **sensitivity.**

❖ ***Industrial Perspective:***

The proposed probe/apparatus ensures **high accuracy, fast response with low nanomolar detection limit, high stability** for diagnostic & therapeutic potential**,** applicable especially in the area of **cancer**, & fast response.

INTELLECTUAL PROPERTY

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TRL (Technology Readiness Level)

TRL- 4, Proof of Concept ready & validated

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