MICPS2-008-PS

A Review: Effectiveness of Solvents in Simultaneous Quantification of Acetaminophen and Caffeine by RP-HPLC

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ABSTRACT

Combination drugs contain at least two types of active substances whose role is to combine therapeutic activities, and increase the potency and action of drugs, to reduce pain intensity more quickly and minimize side effects. The combination drug paracetamol and caffeine has been commonly used in therapy to relieve headaches or migraines, available in various brand names such as Panadol Extra, paramex, and Saridon; The content of both in pharmaceutical preparations varies with a smaller caffeine concentration in each tablet/caplet. The problem with analysis using the spectrophotometric method is overlapping spectra and the HPLC method can overcome this problem. Related articles published in the last 5 years explore issues of both qualitative and quantitative analysis. Starting from the diversity of solvents used on samples and the use of mobile phase compositions for elution of compound mixtures which produce several variations in results. Researchers are interested in reviewing articles about the use of the type of mobile phase and solvent used in the determination of the combination of paracetamol and caffeine in mixed tablet preparations using the HPLC method. The method of this research is a literature review, by searching for articles on Google Scholar, Cochrane Central, PubMed.gov databases via the National Library of Medicine and PMC via NCBI access. Some of the keywords used include a mixture of paracetamol and caffeine, HPLC/KCKT, and analysis of paracetamol and caffeine levels. These keywords are combined using both Indonesian and English using the connecting word "AND/DAN". The search strategy is limited by using several filters, including types of journals that have a SINTA index for SCOPUS indexed National and International articles, publication year 2017-2022, and full text in English and Indonesian. The use of solvent and mobile phase in the combination of paracetamol and caffeine levels using polar solvents resulted in the highest levels of paracetamol at 98.66% and caffeine content of 100.13%. Apart from that, it also had an impact on the recovery value, namely paracetamol 102.11% and caffeine 101.7%. The concentration and recovery values are influenced by differences in the polarity index of each solvent.

Keywords: Acethaminophen, Caffein, HPLC, Review, Solvent.