Thin layer chromatography is commonly used in chemistry to find unknown substances and to separate compounds into their components .TLC spotting is best done using a spotter filled with the substance or compound being tested, when being placed onto the place small spots should be used in order to prevent smearing. Each spot for the unknown substance on the TLC was identifiable by comparing the spots of the known substances to those of the unknown substances , the spots in the unknown columns that had similar Rf values to those in the known column were used to infer the components of the unknown drug since each substance has only one Rf value which was identified using Table TLC.1: Composition of analgesic drugs (mg per tablet) which indicated the components of (Advil, Anacin, Aspirin, Advil Dual Action, Excedrin, Tylenol and Aleve. The Rf values of the unknown compounds are directly related to the polarity of each compound , when dissolved in the acetic acid solution which is a polar solvent, the compound with higher polarity would have a lower r Rf value since it would adhere more to the solvent and therefore move a smaller distance , in this case it was caffeine (more polar) while the compounds with less polarity would have a higher Rf value (aspirin). The compounds , due to their varying polarity will interact with the silica and the solvent differently , the Caffeine which is more polar than aspirin would adhere better to both the silica gel and the solvent since they are both polar .TLC has various uses, it can be used to identify a compound if there are known possible components to compare their Rf values , the components that have similar Rf values would likely correspond to the ingredients of the unknown compound. Then compounds with the same set of ingredients can be assumed to be the same as the sample. TLC can also be used to monitor the completion of a reaction by comparing the Rf value of the reactants and the products .Using the TLC plate, a sample of the reactant can be placed in one column if the plate and the product in another, then the compound can be placed in another column. If the Rf value of the compound is similar to that of the reactant then the reaction has not yet reached completion, however if the e Rf value of the compound is the same as the products , then reaction has likely reached completion. In pure substances a TLC plate will only show one spot, however, since chromatography separates compounds into its components, if the substance is impure , then two or more spots will be

produced since there are multiple substances. Although TLC is very useful it does have its flaws , which makes comparing two different TLC plates difficult and impossible if they do not have a similar spot. Since each TLC plate may have slightly different compositions of the solvent and the silica gel absorbent , this could cause results to be inaccurate.