

AL Chemistry Group Project

Class: 7S

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Drug: Tamiflu

(3R,4R,5S)-4acetylamino-5-amino-3(1-ethylpropoxy)-1-cyclohexene-1-carboxylic acid, ethyl ester, phosphate (1:1).

Treatment of influenza had not been available for all ages of children due to the serious side effects. This had long been a problem until Gilead Sciences, a pharmaceutical factory, discovered “Tamiflu”. It is a systemic treatment for the most common strains of influenza. It attacks the influenza virus and stops them from spreading inside our body, rather than simply masking symptoms. With its non-serious side effects, it ensures good safety profile and fills a previously unmet medical need.

The active ingredient of Tamiflu is Oseltamivir phosphate, which is a white crystalline solid with the chemical formula $C_{16}H_{28}N_2O_4$ (free base). It is an ethyl ester extensively converted by hepatic esterases to the active metabolite, oseltamivir carboxylate, by ester hydrolysis.

Oseltamivir carboxylate is an inhibitor of influenza virus neuraminidase, an enzyme essential for viral replication. It prevents the formation of viral aggregates after their release from host cells, thus preventing the infection of new cells and halting the spread of infection.

Besides Oseltamivir phosphate, the powder for oral suspension also

contains sorbitol, monosodium citrate, xanthan gum, titanium dioxide, tutti-frutti, sodium benzoate, and saccharin sodium. Their uses range from flavoring to alleviating sides effects.

Tamiflu is now available in convenient pill and also liquid formulations, which can be used for patients who cannot swallow a capsule.

According to sixty Infectious diseases Investigation Centre all over the world, e.g. Hong Kong, USA, Canada....., tests were carried out for over 8000 patients suffering influenza. The result shows that Tamiflu is very useful for curing this kind of disease.

It is found that Tamiflu can reduce the probability of having a complication to 50%. Those complication include pneumonia, tracheitis and nasosinusitis. The patient can then be cured 1.3 days before. Also, this can relieve the symptoms of influenza such as fever and cough.

Tamiflu is a drug that cannot be found in drugstores. It needs doctor's approval to ensure that the drug is safely used in Hong Kong.

Two years ago, everyone can buy Tamiflu in any drugstore in Japan. Therefore, the Japanese government made a declaration of selling it safely. However, Tamiflu has a side effect of giving illusions to the consumers. There are several cases of committing suicide in Japan. Thus, after the incidents, the World Health Organization discussed the problem and whether Tamiflu can be sold without doctor's approval.

On the other hand, due to the H1N1 influenza outbreak these days, Tamiflu is in great demand. Therefore, the WHO announced that this drug must be given to severe cases with doctor's approval.