

Fig. 3. Schematic representation of alkyne-azide clicks reaction.

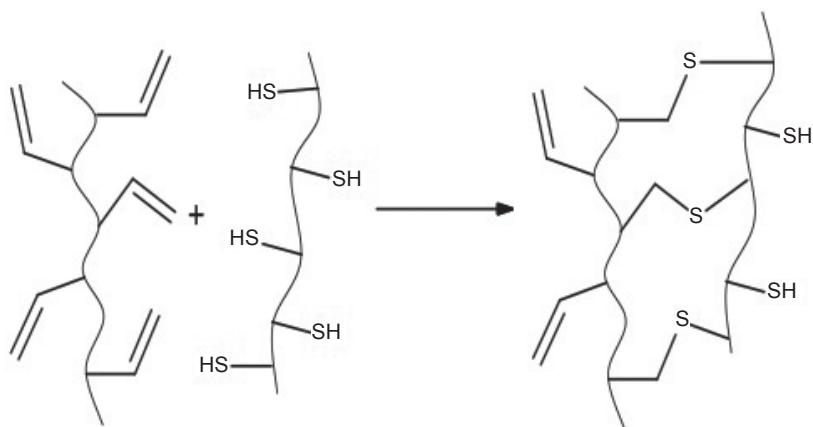


Fig. 4. Schematic representation of Michael addition of vinyl and thiol groups.

and relatively inertness to biomolecules. Michael reactions between thiol and vinyl groups have been extensively investigated to construct injectable *in situ* cross-linked hydrogels for therapeutic applications.

### Schiff's base reactions

Schiff base crosslinked injectable gels are prepared by utilising the reaction between nucleophilic amines or hydrazides and electrophilic carbon atoms of aldehydes or ketones. Schiff's base reactions can occur without any chemicals or catalysts under physiological conditions (Fig. 5). The main parameters such as gelation time and strength of the hydrogel depend on the number of amines and aldehydes groups. Changing the pH of the reaction mixture can control these reactions. One must be careful while choosing the ratios of aldehyde and amines. If any unreacted aldehyde may react with amine groups of bioactive molecules, which may lead for toxicity.